THE PAPER INDUSTRY and PAPER WORLD

JULY, 1941 — VOLUME 23 — NUMBER 4

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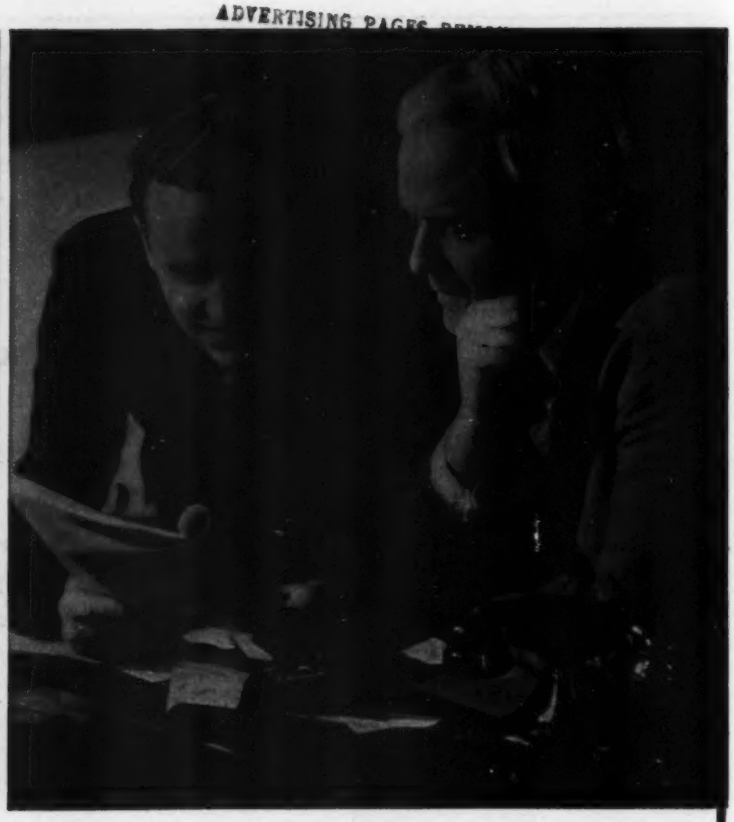
CONSIDERING IMPROVEMENTS IN YOUR *Processing?* YOU'LL NEED COLUMBIA LIQUID CAUSTIC!



PRACTICAL experience with many new developments in processes employing Caustic Soda makes one point especially clear. Caustic Soda of the utmost purity is a most important essential.

To meet these special needs, Columbia was already well prepared in advance—with Liquid Caustic of exceptional purity—and an entire fleet of newly designed tank cars that keep it pure in transit. In fact, for two full years, these unique Columbia cars have been delivering Columbia Liquid Caustic—both 50% and 73% grades—in perfect condition to meet the specific needs of those who use it.

And this is a point it will pay any user of processing chemicals to remember. *All* Columbia products benefit from the same care in manufacture and shipment that make our Liquid Caustic so suitable for the most exacting requirements. It will pay you to standardize on Columbia Chemicals for your needs.

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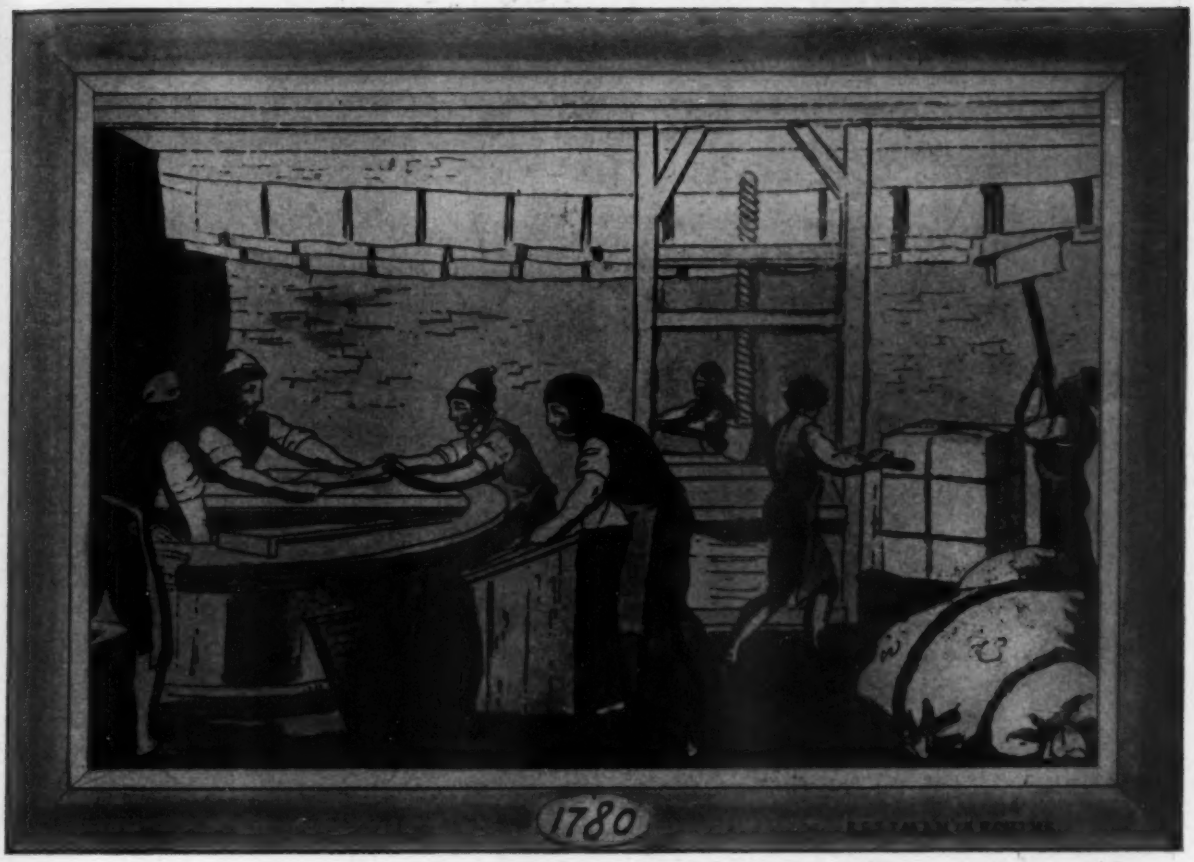


In THE 18th CENTURY PAPER WAS MADE SHEET BY SHEET

Paper making was an art, confined to individuals, who did not think nor work in terms of production. Today tons of paper are produced easier than sheets in the 18th century. Even then felts had an important part in the art. The sheets were placed between felt layers. As paper making developed into a production industry, so too has felt making. Since 1890 Appleton Felts have kept pace year by year with the rapid progress of the paper industry. Today Appleton Felts are standard for those characteristics mills prefer in felts, because Appleton Felts make good paper.

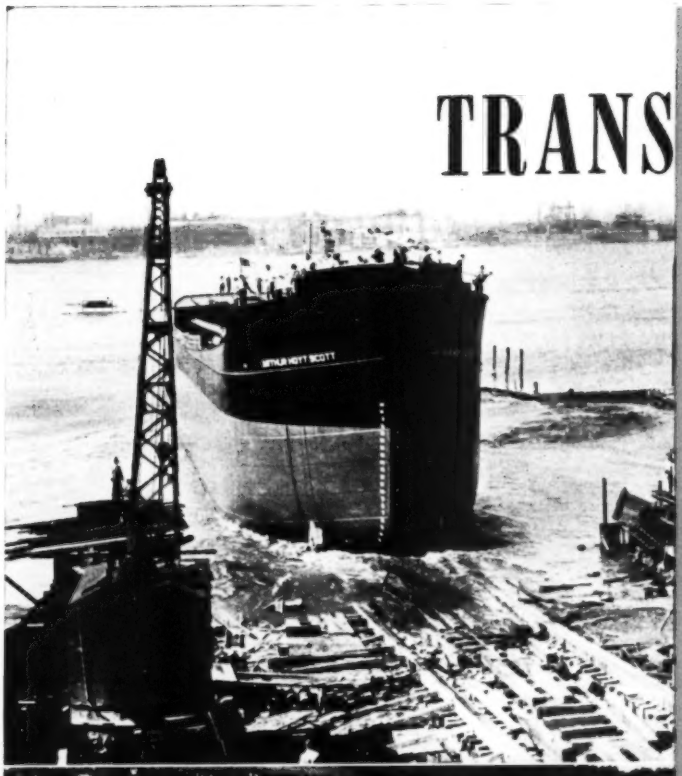
This is the last of a series of six advertisements illustrating the early history of paper making.

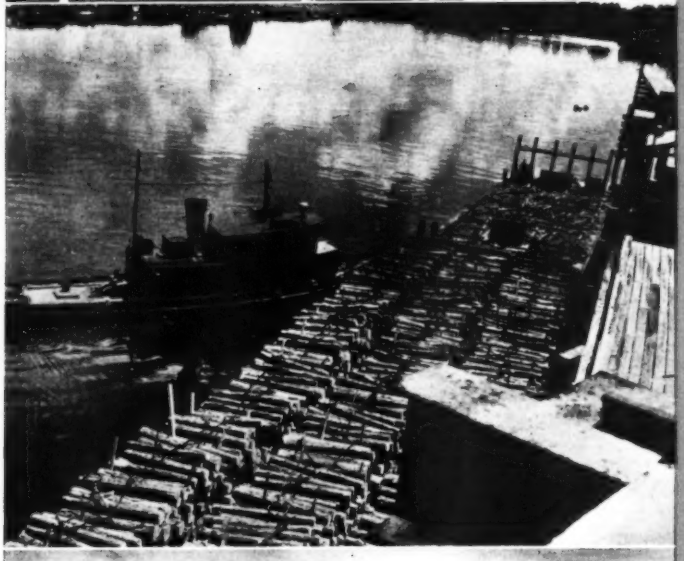
make APPLETON FELTS good paper

Appleton Woolen Mills

APPLETON • WISCONSIN

TRANSPORTATION





● In the early days of the industry, transportation was slow, and it was necessary that the mills be located deep in timbered areas along streams. The mills needed water and the streams provided not only water, but economic transportation.

● Progress has brought modern methods of transportation, and paper mills have found it advantageous to follow industrial development.

● But the world moves faster and faster, and the problem now confronting industrialists is that of providing more and faster transportation—and in doing so, to avoid mounting manufacturing costs.

● Some paper companies with mills located in different parts of the country, have dealt successfully with this problem by establishing their own transportation between plants.

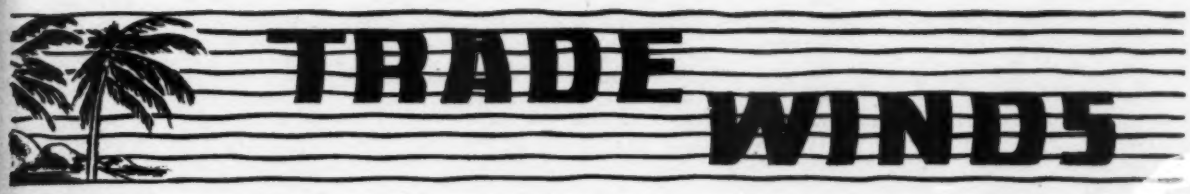
● Due to the present national emergency, all paper mills have been asked by the Government to conserve every means of transportation by utilizing the maximum capacity.

● ● ●

The above illustration shows the "Arthur Hoyt Scott," a 269-ft. paper-pulp carrying boat of 3,500 tons capacity, christened by the Scott Paper Company, Chester, Pennsylvania, at Camden, New Jersey, May 28, with imposing ceremonies attended by officials of the company. The ship, largest boat ever built in the John H. Mathis & Company shipyard, at Camden, will transport bales of paper pulp from the company's mills at Nova Scotia and Brunswick, Georgia, to its plant at Chester, making a round trip between these points in approximately 25 days (See page 320).

A new southern mill located on a ship canal, receives much of its raw material by barge as shown in center illustration.

Below is a train loaded with paper leaving a large, modern paper mill.



I. P. CO. FLOATS NEW BOND ISSUE
SEQUEL: SOUTHERN KRAFT IS MERGED

▶▶▶ A RECENT ANNOUNCEMENT states that the International Paper Company, New York, has sold to four insurance companies at 100 and accrued interest $26,500,000 of its first lien and general mortgage bonds 3⅜ per cent series, dated April 1, 1941, due April 1, 1956. This financial step is taken to accomplish a dual purpose—that of simplifying the company's capital structure, and providing a permanent medium for handling future issues.

The proceeds obtained from the sale of the bonds will be used for: (1) the redemption and accrued interest of Southern Kraft Corporation first leasehold and general mortgage bonds; (2) to refund the secured bank loans of International Paper Company; (3) $4,500,000 has been deposited to be used for new construction which will consist of additions and improvements to the Southern Kraft properties; and (4) to reimburse the company for the cost of the acquisition of the steam and steam-electric plant near Mobile, Alabama.

This issue is secured by a first collateral lien on the Springhill, Louisiana; Georgetown, South Carolina; Panama City, Florida; and Mobile, Alabama, mills of the Southern Kraft Corporation. These properties are considered the most profitable now controlled by this company. In addition it will be secured by a collateral lien, subject to the International Paper First and Refunding 5s, on the more important of the other properties and by a mortgage, subject to the First Refunding 5s and to the Refunding 6s, on substantially all the directly owned properties of the company.

A later release on June 24 carries the news that the Southern Kraft Corporation, a wholly-owned subsidiary, has now been merged with International Paper Company. The Southern Kraft Division of International Paper Company will carry on the business as before without change in personnel.

With this merger, International Paper Company now owns all of the main properties which it controls in the United States, and its corporate structure is greatly simplified.

The Southern Kraft Corporation has been operating as such since March, 1930, through the Southern states. Its mills turn out annually about 1,200,000 tons, and are located at: Springhill, Louisiana; Georgetown, South Carolina; Mobile, Alabama; Panama City, Florida; Camden, Arkansas; Moss Point, Mississippi, and Bastrop, Louisiana (two).

The announcement of the merger states that the transaction does not involve any exchange of securities outstanding in the hands of the public. All the stock of Southern Kraft Corporation was owned by International Paper Company. All of Southern Kraft Corporation's outstanding First Leasehold and General Mortgage 4¼% bonds have been called for redemption on July 12 in connection with the recently announced sale by International Paper Company of $26,500,000 3⅜ per cent bonds. The relatively small amounts of outstanding purchase money obligations of Southern Kraft Corporation will continue as obligations of International Paper Company, which is the successor company.

BRITAIN CARRIES ON!

One thousand British daily and weekly newspapers depend on one single organization for their newsprint.

The organization is the Newsprint Supply Company, an organization that was formed early in 1940 by leaders of the newsprint industry. It is a non-profit corporation whose task it is to see that all newspapers get an equitable distribution and continuous supply during wartime.

Originally newsprint supplies were handled by the Government through the Director of Newsprint in the Paper Control. Lord Beaverbrook deplored the government system of handling newsprint. He predicted a shortage of supplies. The Government heeded this eminent Canadian born statesman and together with Lord Camrose and Lord Kemsley, he formed a board that decided that something had to be done about preserving newsprint.

Another new development is the use of pure cotton rags to manufacture new types of filtering paper which will take the place of similar products that were formerly imported from the Continent. The new paper product is being shipped to such countries as: Egypt, Palestine, China, the Dutch East Indies, the United States, Iceland, and Portugal.

The increasing demand for this product comes from many industries, especially varnish manufacture, gold mining, the electrical trades, and brewers, chemists, and druggists. It is proving to be a valuable export commodity in favor of Great Britain's international trade.

The board agreed that there should be an equalization of price on home and imported newsprint. They set a fixed percentage on newsprint brought in from Canada and Newfoundland. Provisions for a war reserve of 100,000 tons of newsprint were arranged, all to be available to every newspaper wanting to participate in such a scheme. Finally, the three-man board agreed on a provision for assistance in securing raw materials for home mills.

The Newsprint Supply Company was thus born. It consists of three sections: (1) board of directors, (2) rationing committee, (3) working organization.

Prices at this time were in a turmoil. With the establishing of a knowing, guiding hand, the prices were held to a same level. It was held to 26 pounds per ton. It would have been possible to sell newsprint at 24 pounds per ton, but to equalize costs for im-

ported and higher-priced home-manufactured newsprint, the flat price of 26 pounds was established. There is no doubt that the N. S. C. was greatly instrumental in keeping the industry on its feet.

The method of distribution is adjudged by the size and normal requirements of each newspaper member. 5,000 tons are allotted weekly. 75 per cent of this amount is allocated to national and provincial daily and evening newspapers. An active group of some 420 provincial weeklies account for the major portion of the balance, less some 60 tons given to 500 to 600 smaller papers.

Imports account for the 420 provincial weekly papers demand, while the smaller papers are supplied by domestic mills, the larger papers draw from imports and the reserve.

British mills are producing about 100,000 tons annually. Approximately 800,000 tons are brought into the country by the 7 ships owned by the Newsprint Supply. These ships make 4 or 5 ocean-crossing trips annually and can hold 30,000 tons of newsprint.

Thus, it can be seen that Britain Carries On! How true this really is can be seen in the fact that not one British newspaper has failed to appear since the organization started operations!

◆

CAN. INDUSTRY'S MACH. SHOPS ON 24-HR. SCHEDULE

Through the concentrated efforts of individual companies, Canada's pulp and paper industry, which employs more than any other single industry in the Dominion, has mobilized its widespread machine shop facilities and highly specialized technical staffs to give its able assistance to the heavy industries engaged in filling war orders.

In short, the plan which this industry intends to carry out is based on three major points: (1) the educating of skilled workers from the general mill staffs of pulp and paper mills so that there will be a steady flow of capable workers to replace those released or loaned to war industries; (2) the releasing or lending of a technically trained staff of skilled workers to form a backbone of organizations needed in war industries, which are expanding or about to begin operations; (3) the use of all machine shops operated by pulp and paper mills to make the smaller parts and assemblies needed to complete larger machine units.

Substantial machine shops are owned and operated by more than 75 pulp and paper mills for maintenance of their own machines and equipment. These shops normally operate one shift on a 48-hour week, which leaves 96 hours of a six-day week in which they are available to do useful war work. Today, through the efforts of the Wartime Machine Shop Board of the Canadian Pulp and Paper Association, a substantial volume of business has been brought to the machine shops, which are now operating 24 hours a day.

Careful planning is the answer to why this contribution can be carried out without impairing the production of pulp and paper products.

◆

SORG PAPER CO. TO MAKE PLANT IMPROVEMENTS

Approximately $150,000 will be invested by the Sorg Paper Company, Middletown, Ohio, in an improvement program which calls for the rebuilding of the beater room of the Sorg Division which houses three of the company's six paper machines, and the installation of modern refining equipment for one of these machines which manufactures high-grade sulphite and kraft specialties.

Arrangements have been made so that there will be no sacrifice of production while the improvements are being made. The new equipment includes a large Hydrapulper, three large tile-lined chests, and two Shartle Brothers' Cyclifiners. This set of equipment is the same as the company is now using, and it is expected that the same results will be forthcoming. It was announced that the new machines will be in operation by next fall.

◆

FINANCIAL

Celotex Corporation—Net earnings for the six months ending April 30 were $761,235, as against a net loss of $117,396 for the comparable period a year ago.

Dixie-Vortex Company—Net earnings for the year ending March 31 were $840,911, as against $858,385 for the preceding year.

Robert Gair Company—Quarterly dividends of 30 cents per share in respect of the first two quarters of 1941 were declared on the $20 par value preferred stock, payable June 30, 1941.

Gaylord Container Corporation—Net earnings for the quarter ending March 31 were $211,838, as against $201,122 for the same quarter of 1940.

International Paper Company—A net profit of $3,546,822 is reported for the first quarter of 1941, as against $2,960,573 for the same period in 1940. A payment of $5 per share on the accumulation of dividends on the preferred stock was paid this month, and leaves only $5 accumulation.

The company also declared a dividend of $6.25 a share on the outstanding cumulative 7 per cent preferred stock, payable June 28, 1941.

National Container Corporation—Net profit for the March quarter was $225,618 as against $202,117 for the same quarter of 1940.

Soundview Pulp Company—Net earnings for the first five months of 1941 were $815,362 as against $954,977 for the same period in 1940.

West Virginia Pulp and Paper Company—Net earnings for six months to April 30 were $2,206,429 as against $1,366,844 for the same period a year ago. A dividend of 50 cents per share on the common stock has been declared, the first disbursement to common share holders since April 1.

New York Stock Exchange—Stocks

	Closing Prices	
	June 25	May 25
A. P. W. Paper Co.	*1¼–1½	*1–1¼
Celotex	9½	8⅞
Same Preferred	69¾	68
Certain-Teed	*3–3½	2⅞
Same Preferred	29⅞	24⅞
Champion P. & F. Co.	19	18¼
Same Preferred	*102½–104½	103½
Container Corp.	16	13⅝
Cont-Diamond	*8–8⅛	7¾
Crown Zellerbach	12⅜	11⅞
Same Preferred	*85½–87	86
Dixie-Vortex	*7½–8½	*7⅛–8¼
Same "A"	*34–34½	34½
Robert Gair	1⅞	1⅜
Same Preferred	9¾	8⅜
Gaylord Container	*10⅛–10⅞	11
Same Preferred	*52¾–53¾	*52½–56
Internat'nal P.&P. Co.	14⅜	13⅞
Same Preferred	65½	67⅞
McAndrews & Forbes	*27–28	25½
Masonite	*22–22½	22
Mead Corp.	*7¾–8¾	8
Same Preferred	*75½–82	*72½–85
Paraffine Co.	*28–29½	27
Same Preferred	*98¾–100½	*101–102¾
Rayonier	12½	12
Same Preferred	*24¾–25¼	24⅜
Scott Paper	*34½–35⅜	34¼
Same 4½% Pfd.	*112½–113	113
Same 4% Pfd.	*109–110	109
Sutherland Paper	18⅞	18¾
Union Bag & Paper	11	10½
U. S. Gypsum	59	58½
Same Preferred	*175–175¼	175

New York Stock Exchange—Bonds

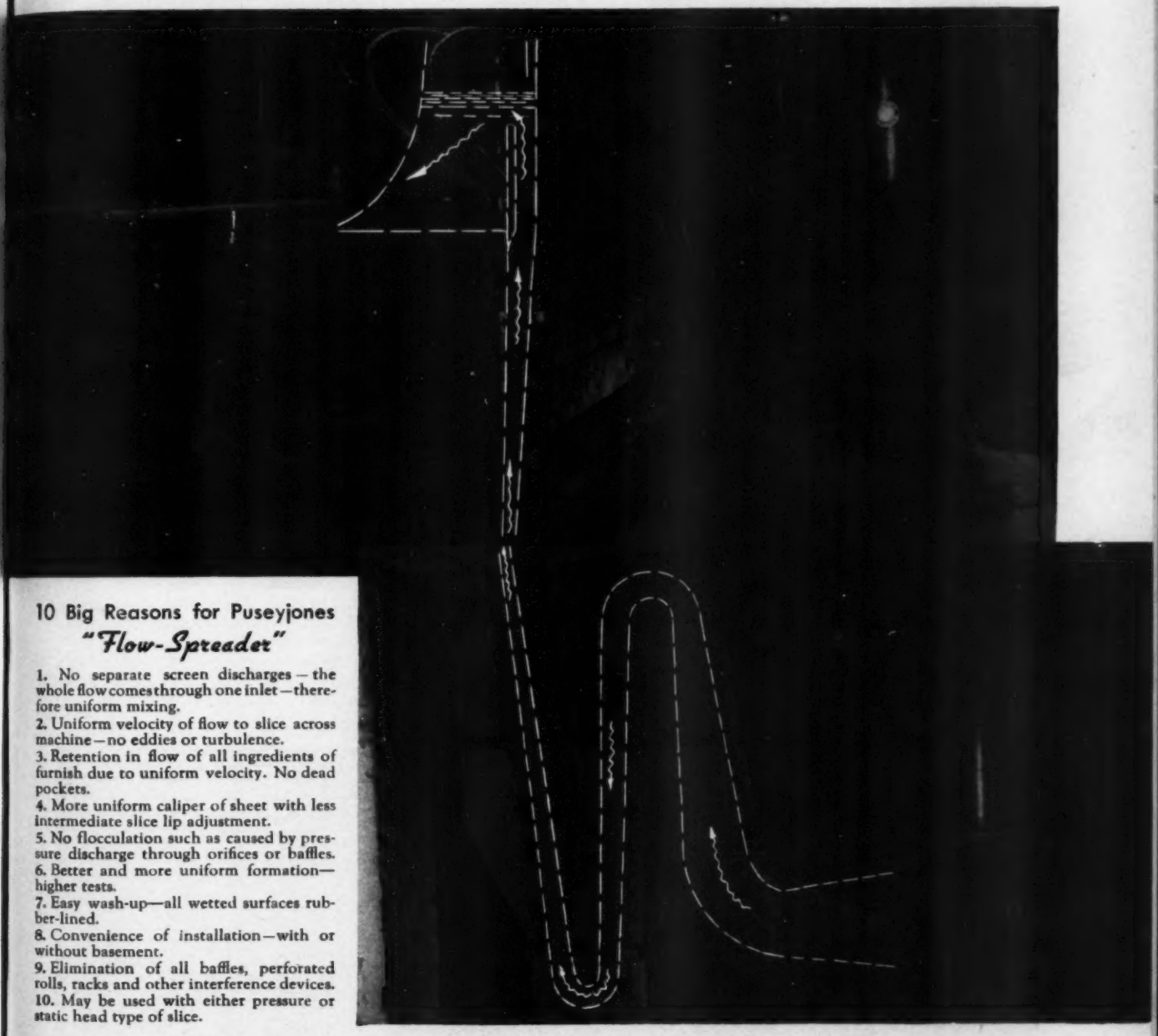
Abitibi 5%	54¾	51
Celotex 4½%	96⅜	95½
Certain-Teed 5½%	86	85½
Champion P.&F. Co.	.....	106½
Inter. P.&P. Co. 5%	104¼	104
Same 6%	104⅜	103¾

New York Curb Exchange—Stocks

Am. Boxboard	*4½–4¾	4¼
Brown Co. Pfd.	*16½–17	14¼
Great Northern	*35⅜–36¾	39
Hummel Ross	5⅛	5¼
Nat. Container	*10¾–11	11⅛
St. Regis	2	1¾
Taggart	*2⅛–2⅜	2
United Wall Paper	1¼	1⅛

*Closing Bid and Asked Prices.

Now the *"Flow-Spreader"*... final step in improving formation



10 Big Reasons for Puseyjones *"Flow-Spreader"*

1. No separate screen discharges – the whole flow comes through one inlet – therefore uniform mixing.
2. Uniform velocity of flow to slice across machine – no eddies or turbulence.
3. Retention in flow of all ingredients of furnish due to uniform velocity. No dead pockets.
4. More uniform caliper of sheet with less intermediate slice lip adjustment.
5. No flocculation such as caused by pressure discharge through orifices or baffles.
6. Better and more uniform formation—higher tests.
7. Easy wash-up—all wetted surfaces rubber-lined.
8. Convenience of installation—with or without basement.
9. Elimination of all baffles, perforated rolls, racks and other interference devices.
10. May be used with either pressure or static head type of slice.

The Puseyjones "Flow-Spreader" provides the answer to the vexing problem of delivering stock of uniform consistency and velocity to the wire. Gone is the old flow box with its multiple inlets, baffles and other flow distributing devices. Based on true hydraulic principles, the entire flow comes from one pipe and is spread evenly across the machine by a simple nozzle construction. The "Flow-Spreader" is now in use on the first four-drinier machine—with three other units under construction—where it is repeating the successes being achieved in connection with Stream-Flow Vat Systems.

Paper is no better than its formation.

THE PUSEY AND JONES CORPORATION

Established 1848. Builders of Paper-making Machinery. Wilmington, Del.

THE SIGN OF TRADE MARK SUPERIOR QUALITY

SCOTT PAPER CO. CHRISTENS NEW PAPER-PULP BOAT

The "Arthur Hoyt Scott," a 269-foot paper-pulp carrying boat of 3500 tons capacity was christened by the Scott Paper Company of Chester, Pennsylvania, in ceremonies at Camden, New Jersey, on Wednesday, May 28, with President Thomas B. McCabe and company officials in attendance.

Mrs. Arthur Hoyt Scott, widow of the son of the company's founder, christened the vessel, named in honor of the man whose direction played such an important part in the company's modern history.

The ship will be used to transport bales of paper pulp from the company's mills at Nova Scotia and Brunswick, Georgia, to its manufacturing plant at Chester, making a round trip between those points in approximately 25 days. (See page 316.)

Pointing to rapidly rising transportation costs, Mr. McCabe indicated that operation of the ship might "play a big part in our constant drive to keep down our manufacturing costs, savings which are translated into lower prices for our products. We now are obtaining a supply of raw material from our two paper mills on the West Coast."

The "Arthur Hoyt Scott" has a maximum displacement of 5,270 tons. It has a beam of 42 feet, 6 inches and a draft of 20 feet, 6 inches. It is a single screw vessel of 1300 horsepower driven by direct connection Diesel. It has a speed of about ten and a half knots. It has three cargo holds and will be equipped with cargo handling facilities both on and off the boat.

Designed by Thomas D. Bowes, Philadelphia naval architect, the boat is of all-welded construction. It has accommodations for a crew of 22, plus an owner's stateroom, a guest stateroom and hospital quarters.

The keel was laid October 1, 1940. Delivery is expected in five or six weeks.

It is the largest boat ever built in the John H. Mathis & Company ship yard at Camden.

◆

MASONITE PLANS EXPANSION—TO COST $1,500,000

More than $1,500,000 will be spent by the Masonite Corporation, Laurel, Mississippi, on a four-point expansion and improvement program, the reason being to expand and speed up the wood fibre-board production to meet the rigid requirements of the national defense program.

An appropriation of $800,000 will be used to build a steam turbine power plant which is expected to be completed about August 15. An additional $600,000 will be expended for constructing and equipping a multi-story addition to what was formerly the Masonite plastics plant. Improvements in the presdwood manufacturing division and in the operating procedures in the insulation board plant are the two last points to be listed under the four improvements that this company is about to make.

IMPORTERS ASK "FREE" POUND—NOT STERLING

Two important questions concerning the duty on imported paper have just been placed on the calendar of the United States Customs Court. The first case involves a disagreement between the Customs officials and the importers of English paper. The importers have requested the high court to overrule the use of the official pound sterling, which is now being used by the Customs officials. It is the contention of the importers that the duty should be computed on the basis of the "free" pound.

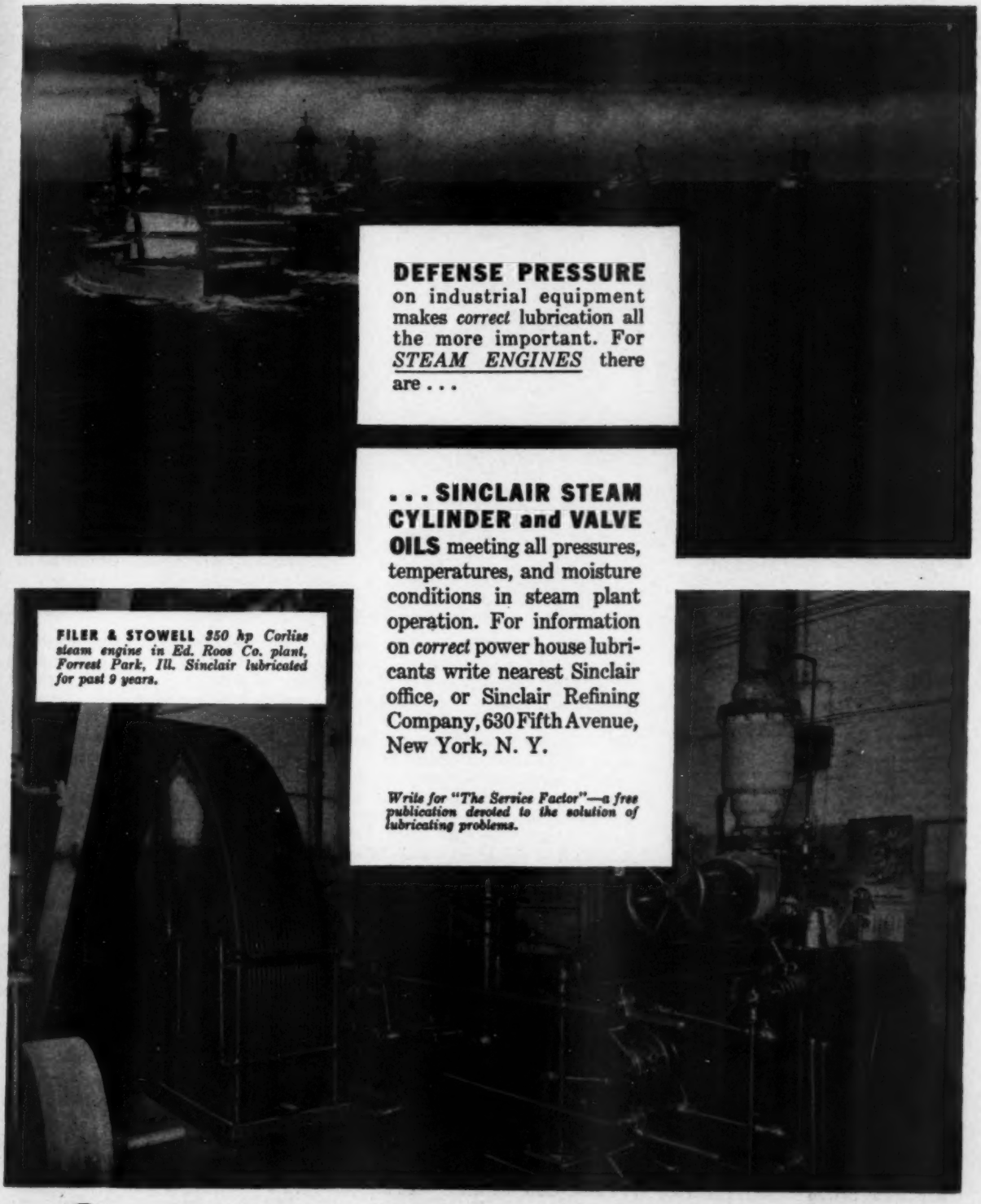
The specific cases in which this question is the issue that were brought before the court in May include: five shipments of filter paper, one of simplex decalcomania, three of drawing, one of stereotype tissue, one of handmade book, and two of Oxford India.

The condensate of the second case brought before the court by another group of importers is the claim that products brought in from Cuba are allowed a 20 per cent reduction in duty by the Reciprocal Trade Agreement, so it is suggested that imports from other countries be granted similar benefits under Most Favored Trade Agreements.

The cases before the court under this claim include the following importations: 6 Japanese filter paper, 2 Belgian velour paper, 1 German aluminum foil paper, 3 Finnish book papers, 4 German litho transfer paper, 4 English autotype rotogravure

Institute Confers Doctor of Philosophy Degrees on Eleven

Eleven graduates received Ph.D. degrees from the Institute of Paper Chemistry, Appleton, Wisconsin, on June 10, and each left immediately to become active in the paper industry by entering various paper-mill organizations throughout the country. Shown here (with their new connection designated) just before they took places in the traditional academic procession of Lawrence College are (left to right): William W. Marteny, Northwest Paper Company; Paul R. Wiley, West Virginia Pulp and Paper Company; Kenneth D. Hay, Peter J. Schweitzer, Inc.; Shirley R. Parsons, Consolidated Water Power and Paper Company; George H. Sheets, The Mead Corporation; Robert A. Stillings, Kimberly-Clark Corporation; John F. Hechtman, Munising Paper Company; Glenn C. Kimble, The Gardner-Richardson Company; Harold Y. Charbonnier, Union Bag and Paper Corporation; and James d'A. Clark, Institute staff. (Not present at the time the picture was taken was Robert W. Reed, Eastman Kodak Company.)



DEFENSE PRESSURE on industrial equipment makes *correct* lubrication all the more important. For *STEAM ENGINES* there are . . .

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Write for "The Service Factor"—a free publication devoted to the solution of lubricating problems.

FILER & STOWELL *350 hp Corliss steam engine in Ed. Roos Co. plant, Forrest Park, Ill. Sinclair lubricated for past 9 years.*

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photo paper, 6 Swedish and Finnish wrapping paper, 2 English waxed candy wrappers, 1 Japanese bibulous tissue, 1 Japanese photo mounts, 1 French drawing paper, 2 German windowpane paper, 5 miscellaneous papers from France, Sweden and Finland.

◆

WESTBROOK STEELE AWARDS GOLD MEDAL

The first presentation of the Westbrook Steele award was made by Mr. Steele, who is executive director of the Institute of Paper Chemistry, Appleton, Wisconsin, at the commencement exercises of Lawrence College, with which the Institute is affiliated, on June 9, at which time twenty-five students received graduate degrees. The first recipient was Robert A. Stillings, Missoula, Montana.

The award, a gold medal, will be awarded annually, to honor that student who has completed the outstanding thesis toward the Doctor of Philosophy degree during the academic year in which his thesis is presented. Eligible are fourth year students whose four years of graduate study are being completed at the Institute. Factors considered for the award are: An understanding of the relationship of the subject of investigation to the broader problems of pulp and papermaking; originality and soundness of approach to the subject; ingenuity of technics; thoroughness; character of research notes and craftsmanship in preparation and presentation of the dissertation. The thesis committee chooses the candidate.

Mr. Stillings was an honor student his four years at the Institute, and his thesis subject was an investigation of the action of ultraviolet light upon cellulose.

◆

PAC. COAST MILLS TO EXPAND UNDER TAX CONCESSIONS

The Pacific Coast newsprint industry has been spurred on by the Canadian Government's decision to recognize newsprint's part in improving the exchange situation with the U. S.

Tax concessions have inspired Pacific Coast companies to expand and increase their buildings and business. Powell River Company has embarked on a million dollar unbleached sulphite pulp program as a direct result of the special tax concessions. The company was able to show that it could produce about four million dollars in U. S. exchange via sales to U. S. markets in the next 3 years through increased capacity, Ottawa allowed Powell River special depreciation allowance on federal taxes for the 3-year period.

The expansion will enable Powell to increase its output of unbleached pulp from 30 tons per day to 100 tons daily, this in addition to a daily output of 700 tons of newsprint.

Other companies beginning or contemplating expansion because of the tax concessions are B. C. Pulp & Paper, Pacific Mills, subsidiary of Crown Zellerbach Corporation, and Westminster Paper Company. Westminster are at present proceeding with expansions that will cost some $300,000.

Westbrook Steele, executive director of the Institute of Paper Chemistry, is shown (left) congratulating Robert A. Stillings, Missoula, Montana, on winning the Westbrook Steele award, given this year for the first time. The gold medal was awarded Stillings for his outstanding thesis toward the Doctor of Philosophy degree during the past year, and he becomes the first recipient of the award which will be given annually.

◆

IMPORTS CONTESTED OVER ASH CONTENT

The decision of the Bureau of Customs to allow paper containing up to 6½ per cent ash to be admitted duty free has been followed by a material increase in the ash content of various papers approaching rotogravure quality according to Warren B. Bullock, manager of the Import Committee of the American Paper Industry. The latest is a Pacific Coast importation of a paper which in appearance is rotogravure, and which the Customs officials held for duty on the basis of their analysis showing 6.7 per cent ash. The shipper and importer are protesting this action, claiming that the ash content was less than 6½ per cent. The shipment is to be used in the rotogravure section of a Western newspaper.

Paper of newsprint furnish imported at New York has been held to be dutiable as printing paper, being over 35 pounds basic weight.

A case tried at Malone, New York, July 10, involves an importation of deep colored pink paper in rolls shipped by the Montmorency Paper Company of Quebec, to the Great Atlantic Paper Company, New York City. The paper is claimed to be duty free as standard newsprint, but was described as culled paper in rolls 34 inches or more in width, and was classified for duty as printing paper. The selling price is also questioned, being $40 per ton, less freight, or $1.65 per 100 pounds, f.o.b. Quebec.

Eleven shipments of ground wood paper from Canada are before the United States Customs Court on the claim of the importer that the value of the paper should be computed for duty purposes on the basis of the buying rate of the Canadian dollar in New York, and not at the official rate of the Canadian dollar.

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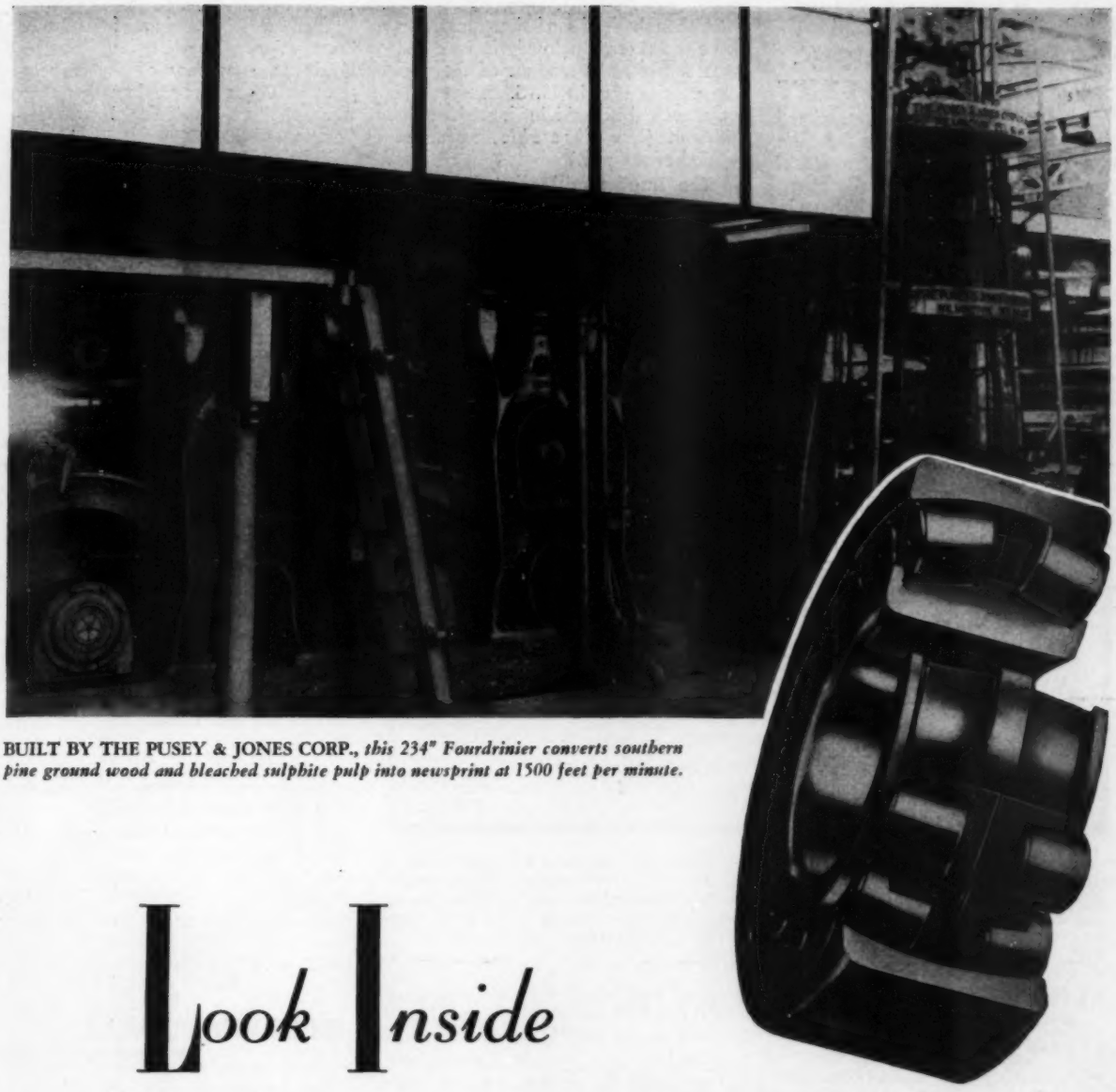
▶▶▶ APPROXIMATELY 6,000 ACRES of forest land in Haliburton County, Ontario, has been granted to the forestry department of the University of Toronto for the training of students, according to a recent announcement by the Hon. Peter Heenan. The purpose of this grant is to enable students to work and study under actual forest conditions.



BUILT BY THE PUSEY & JONES CORP., *this 234" Fourdrinier converts southern pine ground wood and bleached sulphite pulp into newsprint at 1500 feet per minute.*

Look Inside

FOR SKF PERFORMANCE

Inside the Paper Industry's big machines, parts turn smoothly if they depend on SKF Bearings. That's particularly true of the dryer cylinders and calender rolls on this 234" Fourdrinier. On the dryer cylinders, SKF's permit shaft expansion and contraction without imposing extraneous thrust loads on bearings or side frames. On the calender, they maintain full capacity without binding while compensating for roll deflections. From pulp to finished product, there is no job too gruelling for SKF Ball and Roller Bearings. SKF INDUSTRIES, INC., PHILA., PA.

4834

ROLLER SKF BEARINGS

M & O ANNOUNCES SALE OF FINNISH INSULITE PLANT

An announcement of international significance brought news at the close of the month of June that the Minnesota and Ontario Paper Company, Minneapolis, Minnesota, and its affiliate, the Insulite Company, have closed negotiations for the sale of the companies' Finnish interests. R. H. M. Robinson, M & O president, announced that the purchaser was a well-known Finnish corporation.

Although details of the transaction have not been disclosed, it is stated that a substantial amount of the purchase price was in U. S. money; the balance will be paid in finmarks after the war. (Finmarks are blocked for the period of the war.)

The Insulite mill affected by this transaction was built in 1930 at Kymi, six miles inland from Kotka, on the Gulf of Finland. It is said that at one time, shipments of Insulite left this port for some ninety world markets in Asia, Australia, Africa, Europe, Central and South America.

"Hands across the border" is the theme of this float seen this summer in Minneapolis during the Aquatennial, ten-day civic festival. Sponsored by the Minnesota and Ontario Paper Company and its Insulite division, the float typifies friendship between the United States and Canada, in which are located plants of the company at Kenora and Fort Frances, Ontario, and at International Falls, Minnesota.

FLOOD STARTS LOG JAM 12 YRS. OLD

A giant log jam, consisting of 15,000,000 feet of wood, was cleared from the Madeleine River in the Gaspé Peninsula, Province of Quebec, on June 13. The high spring flood waters caused the pile-up, which was the accumulation of 12 years, to start floating down the river.

The Riviere Madeleine Pulp and Paper Company abandoned operations in the area years ago, after repeated attempts to blast the obstruction out of the way with dynamite, had failed. The company had used the river to carry pulpwood from its forest reserves to the mill below Madeleine River.

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▸▸▸ DETERMINED EFFORTS are being made throughout the paper industry to prevent "tight situations" in the price field. It was recently announced by officials of the Priorities Division of the Office of Production Management that production of all paper and board will increase about 500,000 tons over 1940, but while this will keep the mills running at capacity, there is no indication of a paper shortage, especially if there can be interchanges of grades. Kraft board prices have been fixed for the balance of the year by the leading producer, with a $5 per ton increase for the second half of the year over the first half basis. Newsprint prices will remain unchanged.

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BROWN COMPANY REORGANIZES ITS CAN. SUBSIDIARY

The Brown Company, Berlin, New Hampshire, announces that plans have been made for the reorganization of its Canadian subsidiary, the Brown Corporation. According to these plans, Brown Corporation's pre-reorganization claim against Brown Company, of $924,720, would be settled at 15 cents on the dollar, causing a loss of $786,012 which would be charged against the 1941 earnings of the Brown Corporation. The Bersimis Lumber Company, subsidiary of the corporation, would be merged into the latter, resulting in a deficit for Brown Corporation of $814,223.

This settlement has been approved by the Canadian Foreign Exchange Control Board, which is a requirement of Canadian law, but only on the condition that earnings of the corporation to November 30, 1940, be considered for exchange control purposes, to have been fully distributed. The result is a freezing in Canada of the corporation's earnings to November 30, as well as $786,000 of the current earnings.

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APPA WASH. OFFICE TO AID INDUSTRY

The American Paper and Pulp Association is maintaining an office in the Raleigh Hotel, Washington, D. C. This office was established as a contact point between the paper and pulp industry and the Office of Price Administration and Civilian Supply (Leon Henderson's office); and with the Procurement Division of the Office of Production Management through Walter Shorter; and with the Priorities Division headed by D. C. Everest.

It was announced that with the tremendous confusion in Washington and the daily changes in procedure and policy, it is inevitable that in the near future an orderly procedure and definite policy for all industries will be adopted; but until this is done the American Paper and Pulp Association will assist in individual cases as they occur in the paper and pulp field.

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OPM PERSONNEL IS CHANGED

Under the newly reorganized Office of Production Management various problems involving industry will be handled by commodity sections, and not divided among various sections. John D. Biggers will have charge of problems affecting production, priorities, and purchases in the paper field. He will also have charge of steel, aluminum, magnesium, and chemicals.

In direct charge of paper will be Walter S. Shorter, on leave of absence from the International Paper Company, New York, and formerly serving as co-ordinator of army purchasing. The ruling that officers of trade associations may not be retained in the OPM has resulted in the resignation of Charles W. Boyce, secretary of the Kraft Paper Association, from his position as assistant consultant to D. C. Everest, in the Pulp & Paper Unit of the OPM.

THE ARMSTRONG-STAMM MOISTURE CONTROL SYSTEM

EXTREME simplicity characterizes the Armstrong-Stamm Moisture Control System. An "indicating" dryer near the dry end is supplied with a constant QUANTITY of steam. An increase in the moisture content of the entire sheet will lower the steam pressure in the "indicating" dryer. This pressure drop quickly effects a pressure rise in all other dryers to increase the drying capacity of the machine and maintain constant moisture content. A dryer sheet reverses the process. The equipment can be adjusted for any speed of pressure change consistent with machine requirements and turbine operating conditions.

This is a thoroughly tested system which is applicable to any paper machine and is now being used profitably by a number of mills. All installations are taken on a basis of complete satisfaction guaranteed. For complete information, write today.

ARMSTRONG MACHINE WORKS

GRADUATED TEMPERATURE CONTROL SYSTEMS
•
MOISTURE CONTROL SYSTEMS
•
DRAINAGE SYSTEMS

PAPER MILL DIVISION
816 HOFFMAN STREET
THREE RIVERS, MICH.

RECORDING AIR RELIEF CONTROLLERS • AIR RELIEF VALVES • MOISTURE CONTROL DETECTORS • DRYER DRAINAGE RESTRICTORS • DRYER AIR EJECTORS • GRADUATED TEMPERATURE CONTROL VALVES • DRYER DRAINAGE UNITS • STEAM TRAPS • HUMIDIFIERS

SCOTT CO. WILL SPEND $192,000 FOR EXPANSION

The Scott Paper Company, Chester, Pennsylvania, has appropriated $192,000 to carry out a plant expansion program which will add 51,000 square feet of floor space.

The plan calls for the addition of a second and third floor to the present building. This addition will permit an expansion of the industrial towel division.

Tentative plans also include probable expansion of office facilities. A new vacation plan was also contained in this announcement that all of the employees who had completed one year of service with the company would be given two weeks vacation with pay. The vacation period will extend from August 4 to August 18, at which time plant operations will be suspended.

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▶▶▶ ACCORDING TO A RECENT ANNOUNCEMENT the Commonwealth of Australia will further curtail the size of its newspapers because of restrictions imposed on use of newsprint. Customs Minister Harrison said the additional restrictions would save 35,000 to 45,000 tons of newsprint a year, which, added to the existing curtailment, would save a maximum of 103,000 tons a year.

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NETHERLANDS INDIES TEST NATIVE PULP

Tests carried out in the Netherlands Indies show that a definite opportunity exists for the production of chemical pulp and packing paper from local species of wood. Chemical pulp is the raw material used in the manufacture of rayon or artsilk. Two local plants are, at present, turning out wood pulp, wood-free writing, and cigarette papers.

The new plan, which would offer the possibility of exploiting large areas of forest and timber areas, and also would require an estimated capital of 7,500,000 guilders, is experiencing difficulty in obtaining the necessary machinery for the enterprise. A government expert is in the United States at the present time to obtain the machinery.

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▶▶▶ AN ANALYSIS of an RFC report just made available in printed form reveals that authorization totaling $32,443,250 were made to 51 pulp and paper mill enterprises and $14,401,838.62 was disbursed by the Reconstruction Finance Corporation from February 2, 1932, to December 31, 1940.

BRIEFS

▶▶▶ THE EMPLOYEES of the Robertson Paper Box Company, Inc., Montville, Connecticut, returned to work after a vacation which lasted from June 28 to July 7, during which time the entire plant was shut down. Those employees that were paid on the hourly-wage were given vacation pay of 40-hours based on the average hourly earnings this year.

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▶▶▶ A WAGE ORDER establishing minimum wage scales of 40, 38, and 36 cents per hour was recently issued by General Philip B. Fleming, Administrator of the Wage and Hour Division of the United States Department of Labor. The order was put into effect June 30, and almost 50,000 workers realized an increase in their earning capacity.

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▶▶▶ OPERATIONS of the Rhinelander Paper Company, Rhinelander, Wisconsin, stopped on July 3, when all of the employees started a week's vacation with pay. Only maintenance crews worked during the shutdown, making necessary repairs to production machinery.

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▶▶▶ A FIRE DESTROYED 30 tons of rags stored in the Max Prussow warehouse at Marshfield, Wisconsin, recently. The blaze, which caused an estimated loss of $4,500, is believed to have been caused by spontaneous combustion.

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▶▶▶ A NEW 128-INCH deckle crepe wadding machine was recently ordered by the Kimberly-Clark Corporation, Neenah, Wisconsin, to be installed in the new Badger-Globe mill at Neenah. The installation will require the services of about 80 additional men, and will not be completed until March, 1942.

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▶▶▶ BONDHOLDERS in the Abitibi Power and Paper Company, Toronto, Ontario, will receive $130 per $1000 bond—a total of $6,274,710 will be paid to bondholders. This information was disclosed on June 8 when Justice Middleton ordered G. T. Clarkson, receiver and manager of the company, to make the payments. The order provides for payment in Canadian funds, and also instructs that application to the Foreign Exchange Control Board be made so that non-resident holders can be paid the amounts which Canadian funds would produce.

▶▶▶ PLANS FOR THE ESTABLISHMENT OF plants to produce wood pulp in Mexico are being given serious consideration. The pulp to be produced would include grades suitable for the production of rayon, and certain kinds of fine papers.

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▶▶▶ PAPERBOARD PRICES have been stabilized at a maximum of $42.50 for chip board, $57.50 for single manila lined board, and $72.50 for patent coated new board by agreement with the Office of Price Administration. To facilitate this price establishment, waste paper dealers have been asked to stabilize prices for the material used by the paperboard industry.

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▶▶▶ AN IMPROVED TONE in the securities markets during June has resulted in generally higher prices for paper mill stocks. The higher rate of earnings, due to a demand for paper which is causing mills to average 100 per cent of capacity operation is an important factor in the higher prices for these securities.

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▶▶▶ A FORMAL DENIAL of the charges made by the Federal Trade Commission against the Tag Manufacturers Institute has been filed. The charge states that the Institute and its members are guilty of practices in restraint of trade.

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▶▶▶ THE TWELFTH LICENSE to use a secondary head box in the manufacture of fiber board was granted recently to the Gaylord Container Company, St. Louis, Missouri, by the United States Product and Apparatus Patents Department. The secondary head box is a device that improves the quality of the board, increases production, and lowers costs.

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▶▶▶ PRICES FOR ALL KINDS OF PAPER in Palestine have hit a new high, and the price on newsprint is four times what it was at the beginning of the war. This jump in prices was caused by the extreme difficulty encountered in shipping and also the lack of supply in the customary sources. The government has been very liberal in regard to granting permits for the importing of paper from the United States.

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▶▶▶ PAPER MILLS in Neenah, Wisconsin, announced recently that they are co-operating with the Government by voluntarily reducing consumption of chlorine, which has been placed on the voluntary priority list during the national emergency.

Editorial

Production Challenges All Industry

▸▸▸ THE COURSE OF CURRENT EVENTS for the first six months of 1941 has been kaleidoscopic. From January through June, each month has recorded big events and bigger happenings, finally culminating this month in the sudden raiding of Communist Russia by Nazi Germany. The world's two worst disturbers are at last set upon but one objective—the elimination of one or the other. The net result, according to our prognosis, will be the elimination of both.

The world certainly did get a fortunate break when these two enemies of the world's peace and order finally concentrated on the destruction of each other. The destruction which they planned for others, they are now administering to themselves. The outcome can be none other than the final loss of their entire economic wealth and the total annihilation of their economic resources. For on the scale reported in their daily communiques, the destruction of tanks and planes, together with guns, munitions, and civilian commodities, nothing of any economic value will be left. No nations —no matter how rich—can replenish such huge losses as both combatants are now suffering. However, the fight is on to a finish. Every day that the active wars between Russia and Germany on the east and Germany and England on the west, lasts, double punishment and double loss are suffered by Germany. How long will this waste continue? Nobody knows.

But as long as it lasts, the greater is the demand for the "all-out" streamlined production of the United States. The speedier the production of commodities reach their peak in America, the sooner the war in Europe will cease. Streamlined, mass production in America will stop the wars and rehabilitate the world.

The one outstanding duty of the United States to the world is to keep out of war and to keep production at its peak. War destroys. Peace produces. "All-out-producing" America can conquer "all-out-warring" Europe.

The assembly line is mightier than any Maginot line. A world-dominating, streamlined, mass production in America will bring peace to the mass of war-torn people in Europe. The hope of the world's peace lies in the mass production of American commodities for the world's consumption. For America, war is death, Production is life.

The paper industry is doing its best to meet the mass production challenge. Every possible ton of paper is processed through the mills each week as the production charts will show. The industry's watchword is *production.*

Public Acceptance of Color

▸▸▸ WHAT ARE YOUR MOST popular colors in paper? Do you know what is the relative importance of each of your colored papers in volume of sales?

An interesting survey was completed recently by Eagle Printing Ink Company. It covered several hundred leading manufacturers in a wide variety of fields—paint, wall paper, rugs, linoleum, plumbing fixtures, toilet paper, dress fabrics, automobiles, etc.

One leading wall paper manufacturer, according to the survey, stated that ivory and tan backgrounds were best, followed by dusty pink, soft blue, and soft green. A trend toward brighter and more definite color in wall paper also was noted.

One toilet paper concern, which has manufactured toilet paper in natural color for 40 years, in blue, jade and orchid colors for twelve years, and in white for eight years, reported that sales records for 1940 were as follows:

White	52.2 per cent
Natural	17.2 " "
Jade green	14.0 " "
Blue	11.0 " "
Orchid	5.6 " "

These two case studies are indicative of the importance of the right colors in paper as in other commodities if it is to be merchandised successfully.

To this end, the survey contains a check list of considerations in styling with color. Among them are the following:

"Be careful when you try to be different or original with color! It is frequently best to stick to good color ranges, to seek *improvements* in colors rather than changes.

"Color vogues are very difficult to force. Follow your public if you can, and try to find out its wants. Remember that color is emotional—and emotion is more difficult to handle than reason.

"Study your buyers by age, sex, nationality. Find out if you need different hues for different regions of the country.

"To be successful with color you must give people, not what you think they want, but what you know they will accept. And good, sound research will help you accomplish this."

Anticipating Mill Needs

▸▸▸ NECESSITY, nurtured by the economic dislocation of business in the latter days of 1929 and the years following, created a hand-to-mouth buying habit in some pulp and paper mill organizations just as it did with so many individuals. It wasn't that the mills or individuals enjoyed such a buying practice, but it was forced upon them because of straitened financial conditions and the desire to pay as you go. The practice, however, carried on so long that it became somewhat second nature to delay placing orders for actual necessities to maintain efficient operation, let alone the lesser important items which had to be bought from time to time.

Now, with United States industry in the grip of a national emergency, it is equally necessary for purchasing practices of these mills to get in step with the times—to anticipate wants and to place orders sufficiently far in advance so that there will be no disruption of production schedules, or as little disruption as possible, because it is important that the paper mills of the United States meet their demands for paper with the least possible delay.

In the first place, there are raw materials without which mill operations cannot function. Then there are such items as wires, felts, etc., which are equally important. In addition, there are items of equipment which must be purchased to maintain production efficiency or even to improve it.

If your mill has been a hand-to-mouth buyer in the past, and is still making use of that buying procedure, might the suggestion be presented that a careful study of mill requirements for at least the next year or two be made and, when necessary facts have been accumulated, to anticipate your needs by placing orders as far in advance as, in your opinion, the present situation warrants.

Action now may save regrets later.

ADVERTISING PAGES REMOVED

DOING FAVORS . . . or WORKING *for Nothing?*

WILLIAM SIBLEY

▶▶▶ RECENTLY, A GOOD FRIEND OF MINE asked me, between blushes, if I would write for him a series of advertisements to be inserted in a music festival program. The advertisements could be written, he said, in just a little while—perhaps in the cool of some evening when I had nothing else to do. In this case, I was really more than pleased to do the job, but I couldn't help being reminded of M. I. Pitkin's *(Cosmopolitan)* story about that genial raconteur, Montague Glass, and the way he met a similar request for a "favor." Like many another who lives in the House of Authorship he knew from not-too-sweet experience that the thumb of Charity is pressed rather continuously against his doorbell. But let Mr. Glass tell of it, as only he can.

"It is the conviction of my entire family," said Glass, "that since I quit the law in the early nineteen hundreds, I have never done a stroke of work. They concede that I have written a few odd stories and plays, but they do not admit that these are merchantable commodities, and hence to dispose of them for profit is in the nature of obtaining money by a trick or device, almost against the statute in such case made and provided, and the peace and dignity of the State of New York.

"They argue that it costs me no effort to write these little three-act things, while as for a short story of ten thousand words, I dash it off between shaving and breakfast. Consequently, when the President of the North by Northwest Traveling Men's Association asked a relation of mine to ask me to write a short story for them free of charge so that they could print it in the souvenir book of their annual banquet, my relation sat right down and wrote me a letter to that effect.

"Did I write the story? I did. With it I sent a letter in which I said that although I was glad in this one instance to contribute the story, if I asked my relation to supply any of the clubs to which I belonged with table linen—that being the commodity in which my relation deals—I doubted whether he would come across with as much as one small doily.

"The president of the North by Northwest Traveling Men's Association was outraged by my behavior. He sent me back the story (overdue postage 4c) and wrote me a dignified letter in which he regretted that he could not print the story in view of the spirit shown by its writer.

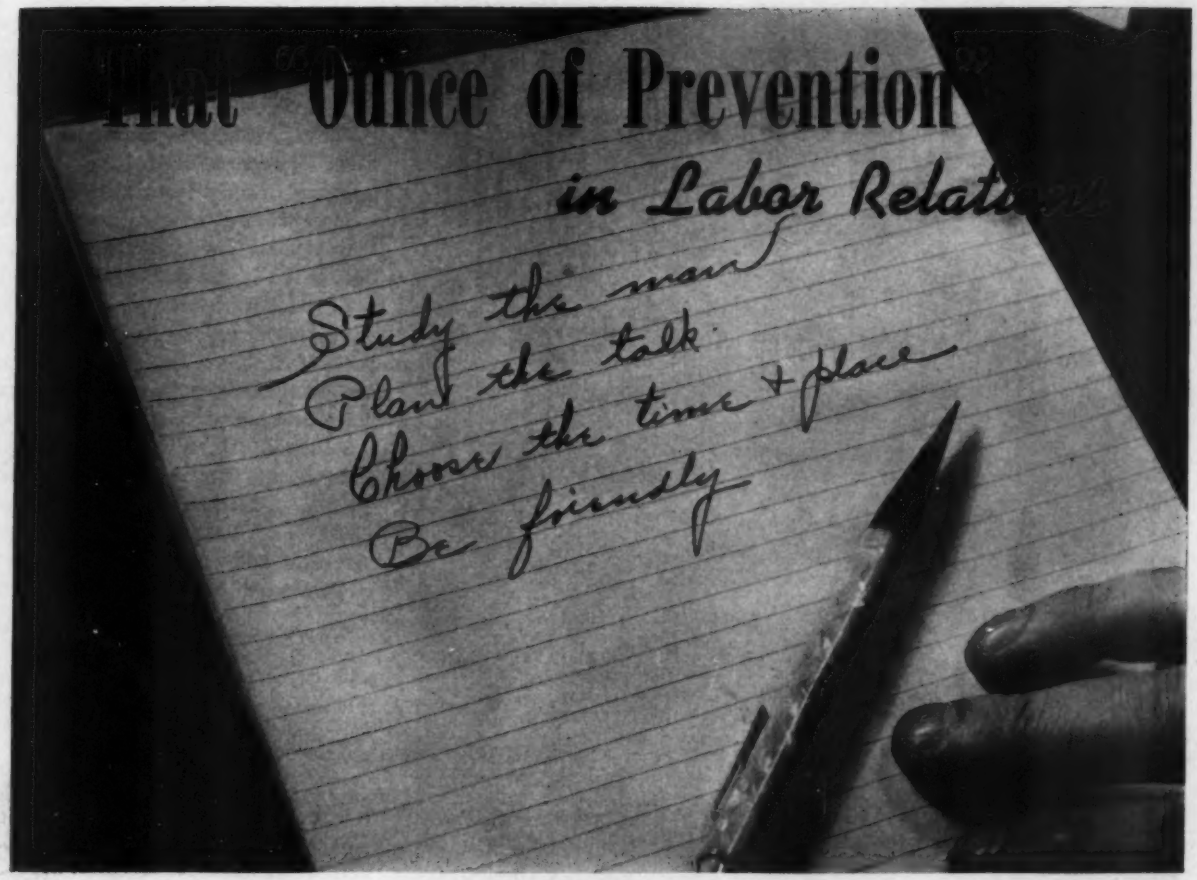
"His rebuke cut me to the heart and it was fully ten minutes before I could recover sufficient composure to enclose the story in another envelope and send it to a magazine. The check for it arrived the following Wednesday morning."

▶▶▶ The general public really doesn't object greatly to paying a doctor five dollars for ten cents worth of pills, because it knows that it is paying for eight or ten years of study and economic self-denial in some medical school together with the realization that it would cost far more than the $4.90 profit to overcome the effects of being given the wrong pill. In like measure, the public almost enjoys paying a liberal fee to a lawyer for a few laconic words of advice since it concedes that behind his answer stands an endless string of sockets from which the midnight candles used to burn. But when it approaches the professional writer for "a few words on this," or "a paragraph or two on that," there seems to be the conviction that any reference to sordid money would be in bad taste. The folks seem to think that writing is some sort of passive recreation like osculation, or swinging in the hammock, or beer imbibing—or perhaps all three.

There is, of course, an obvious reason for this attitude. Words are not material things. You can't put them on the scales or measure them with a yardstick. The author doesn't use a shovel to pile his phrases on paper. They are as intangible as the glowing colors of a sunset, and the public is accustomed only to tangible things. *Paradise Lost* didn't cost the world anything because the world didn't pay for *Paradise Lost*. Milton did. The price he paid was the sight of two eyes and long years of creative effort. It is true, Milton didn't have callouses on his hands, but neither did Shakespeare as he penned the soliloquy in *Hamlet*. Keats didn't have to push a wheelbarrow around the cottage at Hampstead Heath to deliver his "Ode to a Nightingale," nor did Emerson have to run a hundred yards in ten seconds to "dash" off one of his essays. For the uninitiated, writing books looks easy and artless. When they see a phrase well turned, they wonder at its beauty since they are surprised it didn't turn out to be something akin to the scribbling grotesqueries we assign the telephone pad.

There is yet another popular misconception about a writer. People love to assume that he lives and breathes and has his being in a perennial ectoplasm of romance, sipping creme de menthe at expensive clubs, genuflecting to charged glasses, psychoanalyzing the dazzling and dazzled ingenues, or idly strumming a guitar in the depths of his overstuffed chair. If Balzac's stories are racy and bibulous, why not Balzac? If Dumas could expose the seamy side of love affairs—how could he know so much if he didn't partake of his own medicine. What people forget is the rather simple little fact that neither Balzac, nor Dumas, nor practically any other prolific author, could possibly have lived long enough to have personally re-enacted their created situations.

Of course, no one is denying the fact that some writers have been known to make love, or even to mix cocktails. This is not to say that Poe was a prohibitionist, Burns a celebate, or Rabelais a dervish. This is merely to go on record that writers are men who work, and work hard; and also that if their lettered result turns out to be diamonds, those gems are born of intense heat. It is quite true, of course, that there is some small difference between turning out a bit of copy about a few phonograph records and writing *David Copperfield*. But it remains a fact that good writing in any field is predicated on brute will power. Since this is true don't let anyone tell you that it is in bad taste for writers to be compensated for "favors" done—even if it is the North by Northwest Traveling Men's Association.



MERRITT LUM

A true experience of one paper mill which found that a new visual program for foremen improved its industrial relations plan.

▸▸▸ "BECAUSE, MEN, WE'RE IN A NEW ERA in human relations!"—this earnest statement from the manager of personnel relations of a Pennsylvania pulp and paper company came at the end of a heated session around the conference table.

In other plants, adjacent to the plants of this paper company, there had been several labor disturbances: slowdowns, walkouts, strikes. Fortunately, there had been very little bloodshed. Nevertheless, it was a kind of situation that the management of the paper company wished to avoid.

Therefore, a manager's conference on human relations took on a timely significance. Throughout the morning of the conference, the personnel manager and several of the younger men of the management had been arguing for a new setup in grievance procedure.

"The most important thing for us to guard against now is blocked channels," was their claim. "We must take a lesson from our neighboring plants, and see to it that employee grievances do not hatch into the men-versus-the-management issues. We've got to give the organization more voice, and freer opportunity to express itself."

To clarify his point, one of the younger superintendents of the paper mill, who had been in close touch with a classmate in a nearby steel mill in which a walkout had occurred, told a graphic story.

"Now that the trouble is over, and the men are back at work," said the paper mill superintendent, "it is very clear what caused the trouble. It was mainly a misunderstanding about the distribution of overtime. Over the years there had grown up a disposition on the part of certain foremen to use overtime as a basis for reward of those who had done good work, and were popular. Probably, the foremen had certain favorites—that's natural.

"At any rate, instead of keeping meticulously accurate records of the disposition of overtime, instead of allotting it impartially, it became a fast and loose process.

"Management, apparently, had not concerned itself with the matter, particularly; as a matter of fact, the paternalistic method of granting favors was accepted as a part of the management's prerogative, in several areas.

"This practice was, apparently, a hold-over from the days when the boss was 'the little father of his flock.'

"Well," continued the superintendent, "the upshot of this way of handling the matter was that workers began to lose confidence in the essential fairness of the management. This affected, first, only those few who felt left out in the disposition of favors. Then it spread to a larger number. An outside agitator used the situation to his advantage in painting management as greedy and selfish. Even those who then shared the favors began to wonder if they were getting it in the neck in other ways.

"Unfortunately, the real situation was not sensed in time. When paternalism is the custom, you know, there goes a tendency to force matters and to make preemptory decisions. So as the men became restive, there was evidenced more and more of the 'now do as I say and like it' attitude on the part of management. This only made matters worse."

TALKING IT OVER

The illustrations on these pages are from the film "Let's Talk Things Over."

They portray the theme of the film: After pointing out that management recognizes the importance of a frank discussion among themselves, the personnel manager goes on to say: (1) "But do we give equal importance to the opportunity for frank discussion between foreman and employee?" (2) "Men need a clear outlet for their problems, their ideas, their difficulties. Unless this be provided, the channels become blocked. Men become discouraged. Bad attitudes thrive." (3) "Gossip and rumor can wreck morale and badly upset men's

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▶▶▶ The final outcome of this superintendent's story was known to everyone in the group: the abrupt loss in production, the bitter feeling engendered in the community, the ugly scars of false accusation.

Certainly, the officials of this paper mill wished to avoid any such situation in their mill. No argument there!

But all through the discussion, there had come the assurances from the older men: "Yes, but that can't happen to us!" "Our men are well satisfied!" "Our policies are right!" "We wouldn't let such a thing happen!"

It was after this position of smug assurance had been assumed at least a dozen times that the personnel manager made the statement with which this story starts: "Men, we must recognize that we're in a new era in human relations." It was this statement which turned the tide in the conference. For when the facts were laid on the table and faced frankly, it was evident that the human problem had become far more complex than when these older managers had direct contact with it. It was a new world of human relations. The old formulas refused to work.

There were new, powerful forces that were influencing attitudes of the workers. The radio, for example, was listed as being a very disturbing force with men who did not have a solid background of economic understanding. Night after night it brought attacks upon the established orders and raised doubts.

Much government action seemed to be predicated upon assumption that labor had been mulcted of its rights. To many a typical worker in the paper

efforts." (4) Superintendent and foremen talk it over. How can the right sort of contact with employees be established? (5) Our foreman then starts to work on his procedure. Just how can he approach each man in such a way that will induce him to freely open up and let the foreman help him? There finally developed a four-step formula that did the trick for each foreman with each man. It induced frankness on both sides, brought about labor peace, stimulated production. The four steps: (a) Study the man; (b) Plan the talk; (c) Choose the time and place; (d) Be friendly. (6) And today men are saying to the boss: "That contact plan is a great thing for me. Now I know just where I stand."

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mill, this came as gospel, and, quite naturally, was applied to his own plant and his own department.

Inflaming literature had filtered into the community.

The school had ceased to teach reverence for the traditional way of American life.

These influences were faced frankly. By the time lunch was finished, there was a definite swing of the group toward the acceptance of a new situation in human relations. It was agreed that we face a new set of management problems with men. And the natural question was: "Well, what can we *do* about it?"

It was obvious that the older group was thinking in terms of "doing something substantial for the boys." The company was prosperous. Perhaps a new clubhouse or athletic field would be the needed evidence of management good will; or something else that would show that "management was labor's friend."

The personnel manager had a different plan, however—a modern concept of the way to handle the human problem of the new era. The new plan was going to hurt some feelings, for, in distinction to the paternalistic concept of management, it stressed the rights of labor to a voice in its own affairs—a co-operative participation.

"Please don't misunderstand me," the personnel manager said. "I think our management has been extremely fair, and has meant well every step of the way. But that isn't enough today.

"Our real security will come only in giving true self-expression to the organization, opening the channels for

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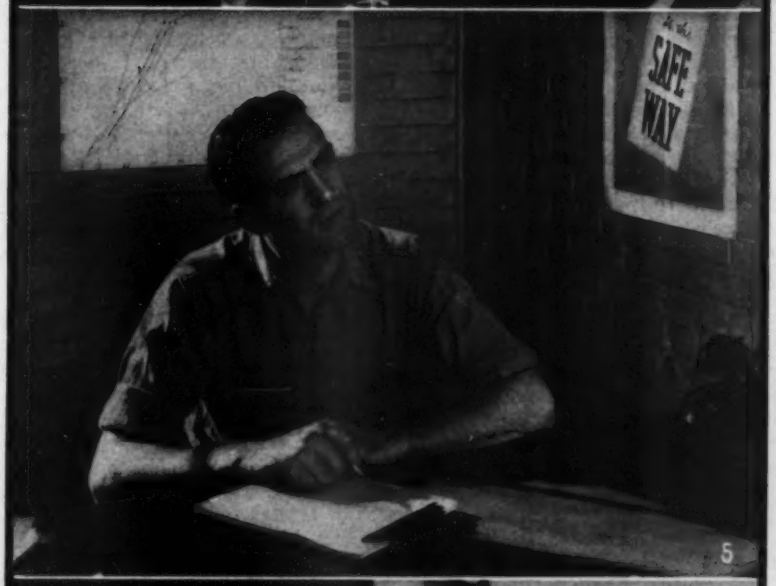

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this expression, and acting not on a paternalistic basis, but rather on a consultive one.

"I propose, therefore, that we begin a new plan with our foremen. They are the key men in our setup: in touch with the employees, and are able to do a contact job which we as management never can do.

"Now we have had a foremen-training plan in the past—a lecture program. But what I am thinking of is the 'forum' type of meeting in which the foremen, not management, do the talking. In this plan, management listens."

Here one of the older men broke in. "You can't do it. They just won't talk. Good theory, perhaps, but it won't work out. We know that from experience."

"Perfectly true with the older methods," the personnel manager replied. "That's why a group of industrial leaders studied the problem thoroughly—men like . . . . . That's why they developed a new technique for opening up discussion channels from workers through foremen, clear up to management.

"And now, gentlemen, I'd like you to see some of the work of this committee—two of the new talking films on industrial relations which are available for supervisory conferences. Then I'll be glad to outline a proposed plan for their use."

At this juncture, the management group adjourned to the conference room where there were exhibited two talking films. The first was entitled "Let's Talk Things Over," and dealt with the wrong and right ways in which an individual worker's activities, problems and progress could be handled by the supervisor. It was built up from actual examples of situations in typical plants.

The second, "A Stitch in Time," dealt with the responsibility of the supervisor for identifying and settling grievances before they become an issue.

Several of the shots from the first film are given as illustrations for this story, to indicate the realism with which the relationships with men is brought home to the supervisor.

Our story moves quickly from here on. For the pictures gave internal evidence of their value in building up a sense of supervisory responsibility. It was clear that if the supervision of the paper company could be induced to face facts as frankly as the supervision shown in the films, a new day in human relations was at hand.

The personnel manager was ready with evidence in that respect from companies where the pictures had been used. It indicated that no longer was there difficulty in getting expression from supervision; expression of its own feelings or of the attitudes of the workers.

A veritable flood of suggestions, questions and criticisms had issued, at the start of the use of this new visual-discussion program in several companies.

The plan for the paper company was outlined. Supervision in each plant would be arranged in groups of not over twenty men to a group.

For each plant, a conference leader would be chosen—a man preferably not in direct charge of the foremen involved; but in a staff position. (This was done to further remove all hesitation to frank speaking.)

The meeting would start with the showing of a fifteen-minute film, announced as representing industry's conception of the foreman-worker relationship.

As discussion developed, the leader would merely guide it into the most constructive channels. Minutes of each meeting would be kept of just those points which the supervisors concerned felt that they wanted to present for management consideration.

The films would give the necessary lead-off for a fivefold discussion of each topic. With the question of periodic check-up, for example, the film "Let's Talk Things Over" might be used to accomplish these objectives:

a) Establish the need for a thorough periodic check-up, through case-examples of what may happen when this is slighted.

b) Make clear the difference between the everyday contact on specific matters and the long-range check of trends.

c) Indicate the dangers of over-criticism and of an attitude of reprimand, as defeating the essential purposes of the periodic check-up.

d) Show the correct ways of planning a contact: the facts to secure.

e) Propose a step-by-step procedure which will insure success with each man.

The new program looked good to this management group. It was adopted. That was some months ago. And now as reports are coming from the various plants of the corporation, it is apparent that the predictions for the program are being fully justified.

The management-worker channels are open wide. Supervision is taking an entirely new attitude toward its responsibilities. There is an aggressive desire to act in management fashion—to sell company policies to workers, by patient explanation, backed by the reason why.

Equally militant is the new supervisory attitude toward revisions of policies. Frank answers are coming to the questions asked of each supervisor on major policy:

"Do you understand this policy?"

"Do your men understand it?"

"Do you agree with it?"

"Do your men agree with it?"

"If not, what should we do about it?"

The minutes of the meeting record the decisions of the conference group. These come to a management conference, which also takes interest in reviewing the films. The fact that top-management is considering its own technique in giving the reprimand, for example, is having a profound effect upon the entire supervisory organization. They feel a sense of partnership which did not before exist. They will now "stop, look and listen" instead of bawling a man out. The fact that management is acting promptly and considerately upon all these stimulated suggestions from the ranks is making the supervisory groups extremely thoughtful about what they recommend to management.

It is too early as yet to evaluate, in dollars and cents, the effect of such a program. Perhaps the net return in smoother day-to-day production and the elimination of waste is not the real measure of good human relationships. It is safe to say that the security which these mill managers already feel as to the lessened possibilities of a labor upset looms largest in their minds. They wanted security above all things. It is in keeping with the traditions of the corporation. It assures continuity of service to customers and return to stockholders.

But as one sees the happier, smoother relationships in thousands of contacts throughout the mill, one realizes that "as a man thinketh so is his output." This company has thus adopted a permanent tool of efficient operation, for it reaches down to where men live, gives them pride, gives them the enthusiasm of understanding and confidence.

Yes, it's a new era in human relations. And this management has a plan which meets the problems of the new era head on, and masters them.

TROUBLE *on the Paper Machine*

II—Press Section

ARCHIE McCAFFERY

▸▸▸ IT IS NOT UNCOMMON for a *felt* to *run off* a *machine*. Of course, it will not run off without cause. If the felt guide is working all right, the felt usually will stay on. Sometimes, however, in spite of the guide, a seam will run behind on one side and permit the felt to run off.

Watch the seam and keep it as straight as possible. Then, unless an accident occurs, the guide usually will handle the felt.

If a *felt* is off the *ends* of the *felt rolls* to any extent, it is poor policy to run it back on the machine. To do so is apt to cause the felt to be caught and torn. In a case of this kind, it is well to throw off the weights and levers and slack up the felt. Then the felt may be pulled back and tightened down.

If a felt is off a machine only slightly, and there is no risk of tearing it, the felt may be run back into position with the guide, partly assisted by human hands.

If a *felt seam* goes *behind on one side*, the felt will skid to that side. An operator may hesitate about tightening the stretch to bring such a felt back because this procedure puts the seam further behind than before. However, it is the method to follow if it will not put the felt into a wrinkle. As soon as the felt shows an inclination to come back, the stretch should be put back to the position it held before making the change in its adjustment.

When getting a felt back on the machine, an operator often may help himself by throwing weights off the press lever on the side toward which he desires the felt to skid. This procedure is quite an effective way to get a felt to move. If the press is stopped for any reason during this period of felt adjustment, it should not be started before the weights are replaced.

A good felt will not develop slack edges until badly worn. Slack edges, however, might be an inherent characteristic of a poor felt.

The *edges* of a *felt* commonly *wear out first*. When a felt is badly worn, the edges will become slack and thus render the guide useless. To make the guide effective, it is necessary to tear off a strip of the felt about two inches wide from the worn edge next to the guide.

When *ravelings* develop *on* the *edges of* a *felt*, they must be removed. They cannot be removed from high speed machines when running, so it is necessary to wait until there is a break and the press is stopped before doing the job.

In washing a felt, it is not possible to be too careful in turning the edges. The *edges may be cracked* with the pole used for turning them if sufficient care is not exercised in performing the operation. Likewise, the *edges* are *apt to burst* if an excess of pressure is brought to bear upon them. Care also should be taken in starting a felt that is roped in the middle of the machine. If the press is started suddenly, the bottom roll will start before the felt and in so doing will put holes in it.

If a seam runs behind on one side of the machine, it may be straightened by running a ball of twine on some inside felt roll where there is long draw in front of such roll and on the same side of machine as the lagging seam. For best results, the twine should not be too near the edge of the felt roll.

If the *seam* is *behind in* the *middle*, the twine may be run on from a pail that is held in suitable position by being attached to one end of a short pole.

The running of twine on a roll in this way will not injure a felt. On the contrary, it will extend the useful life of a felt with a lagging seam.

All felts with lagging seams are unsteady. Such felts will not dry the paper properly. Likewise, without an automatic guide, they cannot be kept steady while running.

A *lagging seam* may develop *in any felt if* it is *run very tight*. Stock gathering on felt rolls also will change the position of a seam in a felt. If these

HAVE YOU HAD TO DEAL WITH ANY OF THESE TROUBLES?

Felt: runs off machine . . . off ends of felt rolls . . . seam behind on one side, in middle . . . edges wear out first . . . ravelings on edges . . . edges may be cracked—apt to burst ● Lagging seam in any felt if run very tight ● Seldom will seam of wet felt bother by filling ● Too much air will blow water out of press bight onto felt ● Shankers on felt ● Lump in edge of sheet ● Foam contacts first felt ● Grease gets on felt ● Soda ash in water, sometimes will drip on paper or felt ● Paper dries with streaks in it ● Holes in felts ● Edge of felt will run into roll ● Felt with nap lying wrong way ● Dirty felt ● Narrow felt ● Upright press run without automatic guide ● Stretch of felt slackened with eccentric out ● Proper setting of stretches ● Felt will run into a wrinkle ● Bushings wear out in wet felt roll box, in boxes between dryers ● Felt roll journals break ● Index wheel of guide becomes dull ● Guide breaks on wet felt ● Press rolls get out of caliper ● Rubber covering of suction press roll lets go of shell ● Blowing may occur ● Streak in a felt ● Press becomes plugged ● Rubber-covered press rolls become corrugated ● Press roll journals get hot ● Vacuum leaves the first felt suction box ● Press lever breaks ● Shell markings in sheet ● Badly filled press felt ● Guard board may retain objects that cut jacket ● Lumps in jacket ● Water between lip and guard board ● Doctor blade will not fit face of top roll ● Doctor thrown out of line ● Save-all beneath a press develops leak.

rolls are coated, they can be hosed off during a break; but afterward the seam should be watched since it surely will change.

Seldom will the *seam* of a *wet felt bother by filling.* The author experienced this trouble with one brand of felt, the trouble occurring in a number of successive felts. Washing a felt with such a seam before it is too badly filled prevents the felt from being cut in two at the seam.

On most machines, an air jet is provided to blow back the water that otherwise would run out over the ends of a bottom press roll, wet the felt, and permit the felt to throw water. Only sufficient air should be used to keep the water in off the ends of the roll. *Too much air will blow* the *water out of* the *press bight* and *onto* the *felt.* Such water will cause felt marks in the paper.

Often it is difficult to locate the jet so that it will not be jarred or shoved into the felt. Therefore, a square stick tied against the press frame so that a corner of it will rub the edge of the felt is suggested as a substitute.

The shanker-board should have a sharp beveled edge. If this edge is kept in shape, there will be no shankers to cause trouble. When there are *shankers on a felt,* a medium fine comb may be used to comb them off, or, at least, those shankers large enough to cause a break in the paper.

▶▶▶ A *lump in* the *edge of* the *sheet* may cause the sheet to follow the felt and wrap itself around a carrier roll. At such a time, the felt immediately goes into a wrinkle. The only thing that can be done is to stop the press, get the paper off the roll, and again take the sheet over the machine.

If *foam contacts* the *first felt,* that felt will mark. Foam must be killed if paper is to be made.

Sometimes *grease gets on a felt,* especially during a wash-up on a machine which runs grease boxes on the press roll journals. Such grease will find its way into the save-all beneath the bottom press roll. This grease does no harm unless it fills the save-all orifices through which the water escapes. In this case, the grease will float on the surface of the water of the filled save-all and smear the felt. Grease on a felt will retard water removal and cause felt marks in the paper.

Often a solution of *soda ash in water* is used on a felt in the process of washing. This solution will be on the doctors, save-alls, foot-boards and crumb catchers after the felt is washed and *sometimes will drip on* the *paper or felt* after the sheet is taken over. Such dripping will do little or no harm on news or coarse papers; but, on fine grades, where colors are run, it will cause spots in the paper as the color of the sheet will be killed where the solution contacts the paper; or, for that matter, the felt. To avoid this difficulty, the crumb catchers and all fixtures, such as save-alls and doctors, should be blown off with the air hose at the end of the wash-up.

If the *paper dries with streaks in it,* the felts will have to be washed. On some grades, such as news, temporary relief may be obtained by thinning the sheet in the area of the streaks at the slices. This procedure, however, will not do on all grades of paper.

▶▶▶ *Holes* often come *in felts* for no apparent reason. A hole in a first felt will not break the paper on the first press but rather causes the sheet in its travel through the machine to crush on the second press at the point of the hole in the first press felt. Crushing is due to the failure of the first press to satisfactorily press the sheet in the area circumscribed by the hole.

At times, the *edge of a felt,* if not prevented, *will run into* a *roll* when the felt is roped. Such a felt should be stopped immediately when the edge commences to roll or it will be spoiled. The washing operation would have to be completed after running the press slowly and unfurling the felt by hand.

A *felt with* the *nap lying* the *wrong way* will fill the sheet with tiny felt marks. Whether this condition can be allowed to exist, depends a great deal on the paper being made. The felt might have to be turned around, and that could be done only by taking it off the machine.

If a press or wet felt has been left on so long that it functions unsatisfactorily, it will have to be replaced with a new one. The same applies to a wire or dryer felt. Making the change is some job if the change involves a dryer felt, and the work must be done during the night.

▶▶▶ One of the first symptoms of a *dirty felt* may be the failure of a press to satisfactorily remove water uniformly across the width of the sheet. A felt showing such symptoms may pass through a tour or two by scrubbing the filled up area with a wire brush. Should a break occur, a pressure hose played on the felt would help. The water, however, should be confined only to the filled up area.

The wire brush simply roughens the nap, permitting the sheet to be pressed harder. It is unnecessary to caution against injury of the felt surface. If wire brushing of the felt does not cause the sheet to lay down or stick to the roll, all that anyone can do is to wash the felt.

A felt conditioner reduces the trouble from dirty felts to a minimum.

All horizontal felts have automatic guides. If a *narrow felt* is being run with a guide of the wire guide type, the pan, or possibly the bracket, will have to be shoved in to accommodate the narrow felt. If a loose block type of guide is used, shove in the block or put on a wider strap.

When an *upright press* is being *run without* an *automatic guide,* it is necessary for one edge of the felt to hang over the ends of the top press roll; otherwise, the felt will not stay on the machine.

If the *stretch of a felt* is *slackened with* the *eccentric out,* the felt must be stopped and then the back side end of the stretch must be adjusted to conform with the adjustment of front side end.

A machine tender must know that the ends of a stretch roll do not run all of the time at right angles to the machine frame. Often some roll is out of distance a little and the difference is made up in the stretch. This condition is not unusual on poorly kept machines. Therefore, it behooves the machine tender to know the *proper setting of* the *stretches* to permit rapid resetting in case of an accident or other situation demanding it.

▶▶▶ Although a wet felt roll doesn't cause much disturbance by being out of distance, a lot of trouble may be caused if a dryer felt roll is not distanced properly.

Under such conditions, a dryer felt may run all right when things are running smoothly. However, that *felt will run into* a *wrinkle* should steam leave the felt dryers, or if the paper becomes heavy and runs wet.

When *bushings wear out in* a *wet felt roll box,* they change the distance of the roll, which, in turn, shortens the felt. If a *bushing wears out in* one of the *boxes between* the *dryers,* it will change the draw of the paper and cause it to wrinkle.

Until replacements can be installed, the stand supporting a worn bushing must be shimmed up or down, depending upon whether the bushing is in the top or bottom deck. Shimming has a tendency to guide the dryer felt off. However, unless the condition is very bad, the felt guide will handle it. Then, too, there is the hand guide.

Felt roll journals often *break* and spoil a felt. Nothing can be done to prevent such an occurrence if the journals are too light for the work. Yet, a word of caution may not be amiss, that is—the immediate cooling of any hot journal or shaft will crystallize it and render it more susceptible to breaking. Therefore, some discretion should

be shown in the use of cold water for the cooling of a hot journal.

If the *index wheel of* a *guide becomes dull*, take it out and replace it with a sharp one. If a *guide breaks on* a *wet felt*, have it repaired. Little can be done without it.

Top *press rolls* as well as bottom rolls *get out of caliper* and cause trouble. The only cure for such rolls is to take them out and grind them.

▶▶▶ Seldom does the *rubber covering of* a *suction press roll let go of* the *shell*; but should this situation occur, the only thing that can be done is to remove the roll and send it to the factory where it was made for re-covering. In such a situation, it is just possible that there is no rubber-covered roll in stock to take its place and a standard press roll has to be substituted.

The first complication arising from a change of this kind will be the getting of water out of the paper and running the machine at the customary speed. Naturally, if the desired speed cannot be obtained, the machine must be slowed down. Then, too, *blowing may occur* if the change relates to a first press roll and the felt roll near the couch is set too low, or the little rider roll cannot be let down low enough to hold the sheet down on the felt and keep out the air.

Another feature in connection with blowing is the manner in which the felt is made. A felt for a suction roll is stronger, tougher, and less porous than a felt for a standard press, and it is more susceptible to blowing. While it may be possible to get along with a felt of this kind, it is better to put on another felt of the desired weave if such a felt is in stock.

If a *streak* is observed *in* a *felt* after putting in a press roll or after someone has been working around the machine with tacks, stop the press and examine the press roll. Tacks will spoil a felt in a little while.

▶▶▶ After an electric light has been broken around a felt which has a suction box, watch the felt for a time. If it becomes thin in a certain area, it is possible that a piece of glass has caught in the suction box and is wearing away the felt.

If a *press becomes plugged*, let it run. Do not stop it. Put on the shower and play a hose on the wad until it is driven to the backside and off the machine.

If the press is stopped when the plug is discovered, it nearly always causes a hole to be punched in the felt and perhaps ruins it. The reason for this trouble is that the felt, when the press is nearly stopped, gets a grip on the plug and draws it into the nip just far enough to puncture the felt.

Another thing which should not be done when a press plugs is to take weights off the press levers. The removal of weights surely will spoil the felt.

Rubber-covered press rolls that *become corrugated* should be taken out and ground. Otherwise, the paper will not dry evenly.

Press roll journals often *get hot*. Cooling should be accomplished through the use of oil or grease. Hot journals will cause a stone press roll to crack, thus ruining the roll as there is no way to repair it.

▶▶▶ If *vacuum leaves* the *first felt suction box*, little or no immediate harm is likely to result unless squeeze rolls and shower are being run. When there is no suction press roll, such vacuum must be run. Therefore, the reason for the absence of vacuum must be determined and the condition remedied. Be sure to see that priming water is on the pump.

If a *press lever breaks*, stop the press and have the repair made.

Shell markings in the *sheet* are not uncommon when running suction rolls. Seldom do these markings occur at the couch; rather they are produced when the wet sheet enters the first press.

The cause of these markings by the first press is too wet a sheet leaving the couch. This condition is brought about by inadequate vacuum on the suction boxes or suction roll, slow stock, heavy paper, or too much water in the sheet.

▶▶▶ With a *badly filled press felt* following the suction first press, the spots in the paper that covered the holes in the first press roll will crush sometimes on the press felt.

The *guard board* at times *may retain objects that cut* the *jacket*. If a streak develops around the entire circumference of the jacket, something has caught in the guard board, or there is a knot or knurl in the edge of the guard board lip.

To ascertain the cause, run a string with a knot in it beneath the guard board at the place of the streak in the jacket. If an object is being held by the guard board, the knot in the string will remove it or the string will be cut in two by it. In the latter case, the only thing to do is to shut down and remove it. If there is a knurl or knot in the lip, it is possible to get along for a time by no further lowering of the lip. A tack in a jacket may be located by holding the edge of a calender scraper on the jacket.

Lumps in a jacket are often caused by the wearing off of wool inside the jacket. At other times, they may be caused by stock getting into the ends of the jacket. Such lumps, causing a bulge in the face of the jacket, wear the edge of the guard board lip which allows a streak of water to follow the jacket. If there are no lumps in the jacket and a streak of water follows it beneath the guard board, there should be a strong suspicion that something has been picked up by the jacket—possibly a tack. A tack under such conditions nicks the guard board and lets the water by. Shut down and take out the tack as it will ruin the wire in a very few minutes.

Water sometimes finds its way *between* the *lip and* the *guard board*. This condition may arise if the guard board is either too narrow or warped, or if the lip is set too low beneath the plank.

▶▶▶ If the guard board lip needs planing, it may be removed any time the machine is down by loosening the screws or removing wedges, if they are used.

Perfect fitting doctors are required on all presses. With line presses, the doctor shafts invariably are set in permanent fixtures and are provided with adjustment screws front and back.

If a bottom bearing on one side of a press of such design becomes worn, both top and bottom rolls will settle. If a rubber-covered bottom roll gets out of true, the top roll will settle. In either case, the *doctor blade will not fit* the *face of* the *top roll*. If the press rolls have settled on the front side, the raising of the doctor shaft on the back side will cause the doctor to be of the same cant as the rolls and the blade to fit.

Reverse presses often are designed so that the doctor shaft is supported by an extension of the box that covers the top press roll journal. Such a *doctor* will not be *thrown out of line* with the top roll if, for any reason, the presses settle. It will, however, be put out of line if such a bearing to which it is attached becomes worn, and it may be refitted by raising its shaft on the same side of the machine.

▶▶▶ If a *save-all beneath a press develops* a *leak*, the save-all will have to be replaced, or, as a temporary measure, lined with a strip of apron material. A first press save-all leak will cause the felt to mark. On the other hand, a second or third press save-all leak might not mark the sheet any more than by putting a wet streak in the paper.

EDITOR'S NOTE: This series of articles will be continued. Part I discussing troubles on the fourdrinier appeared in the June issue.

GLASSINE PAPER . . .

Some Aspects in its Manufacture

KARL W. FRIES

▸▸▸ THE MANUFACTURE OF glassine and greaseproof papers has not been discussed very extensively during the past in the trade literature. This is probably caused by the fact that this branch of the paper industry is not impressive to the statistician with respect to volume production, such as newsprint, book, wrapping paper or board. Nevertheless, glassine papers play an important part in our national economy, due to the reliance of the food industry on glassine as a low cost, but highly efficient and appealing wrapper.

It may be mentioned here that the manufacture of both glassine and greaseproof papers follows identical lines up to the reel of the paper machine. At this place, these two types of paper separate. The greaseproof paper goes to the sheet cutters or to the winder for shipping rolls, while the glassine raw stock is moistened and goes to the supercalenders.

About ten years ago, when Cellophane began to step into the wrapping field, it was generally believed that glassine had received the death blow. However, after a short period of reduced business, the trend of glassine consumption went up again and the volume sold soon surpassed that of the period prior to the introduction of Cellophane. It became apparent that Cellophane had made the public "transparent wrapper conscious," and the demand for glassine paper rose sharply.

Before proceeding any further, a brief discussion of the requirements of a modern food wrapping material may be well placed. Originally the only purposes of wrapping food were to protect it from contamination and to hold loose material together. Then came the request for appealing effect to the eye, which is brought about by color, transparency and printing. Finally, it was demanded that the paper be impermeable to grease, oil and water vapors. The last named property is stressed more and more by food packers, because many products are rendered valueless, if they dry out or pick up moisture. Frozen food, for instance, should not dry out, while powdered fruit flavors should not pick up moisture from the air and thus become liquefied. Other requirements are low cost, fair strength, light weight, and little bulk. All of these properties are embodied in glassine, either as it comes directly from the supercalender or after it has received some additional treatment. The glassine business has received a tremendous impetus under the present emergency, because many processors no longer can obtain aluminum foil, and in many cases have replaced it with treated glassine.

Glassine papers as they reach the final consumer are divided into two general groups; namely, treated and untreated glassine.

Treated glassine includes all those grades that are coated, laminated, surface sized, or waxed, following the supercalendering process.

Paper mill finished glassine papers are classified into different grades according to transparency and greaseproofness, the individual mills having their own trade names for the different grades. The grading of the individual mills, however, is not entirely arbitrary and meaningless. The Glassine and Greaseproof Manufacturers Association has set up standards of sharply defined limits of transparency ratio for each grade and basis weight, and has coined names for these standards. It is, therefore, always possible to examine an unknown sheet, and to give it a definite classification according to the transparency ratio and basis weight.

Transparency ratio is the ratio of parallel light transmission to total light transmission as determined with the Institute of Paper Chemistry transparency tester.

Opaque glassines are graded according to opacity and greaseproofness, as determined by an opacimeter, and by the time of initial turpentine penetration, respectively.

The present method of producing glassine paper is to subject the stock to a high degree of beating in a way that the fibers are not cut but defibrillated (Figure 1), and to pass the paper from the machine through a process of intensive supercalendering.

The principle involved in the manufacture of transparent papers is to obtain optical contact between the individual fibers; i.e., to obtain a homogeneous mass of the same, or nearly the same, refractive index, so that the least amount of light scattering and reflecting takes place. It is, therefore, the endeavor of the papermaker to remove air voids to the largest possible extent, because the presence of air voids within the sheet is the single factor which has the greatest dele-

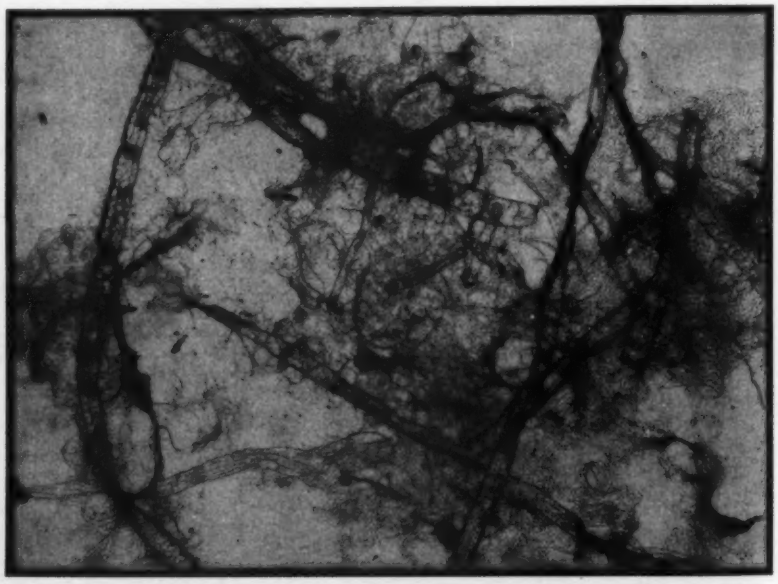


Figure 1 ⟶

← Figure 2

terious effect on transparent qualities (Wicker, Dan B., *P. Tr. J.* 110-42, 1940). The refractive index of air is 1.00, while that of cellulose fibers is 1.55. It is, therefore, necessary to produce a dense sheet on the paper machine and the problem of paper beating deserves very close attention.

Beating is generally carried out in 1000-1500 lb. beaters with stone roll and stone bed plate (Figure 2), followed by jordans. Beating time varies from 2 to 7 hours, at a consistency of 5-6 per cent o.d. In the past, some mills heated the beater charge with steam, in the belief that better hydration would be obtained. It was found, however, that this opinion was erroneous, and beating is now carried out without addition of steam. The heat developed during the beating process, however, is considerable. With the higher grades, the temperature of the stock goes up to 160 deg. Fahr. before the beater is ready for dumping.

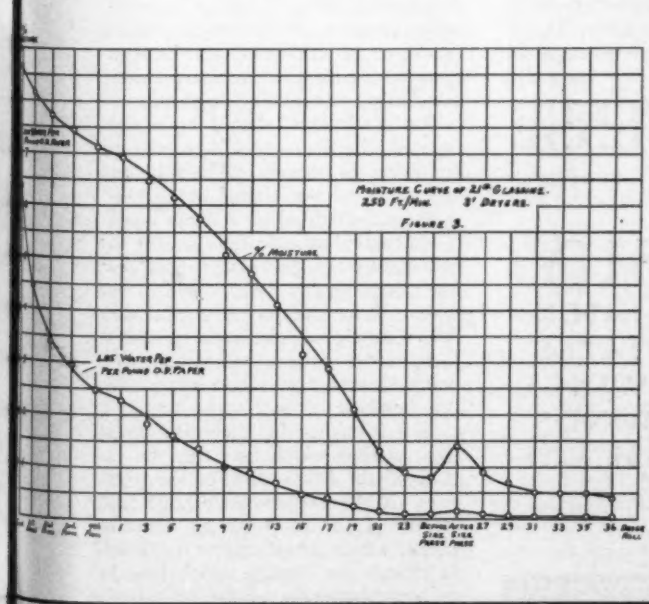
There is a definite tendency under way at present to get away from beaters and to do all the beating in continuous refiners.

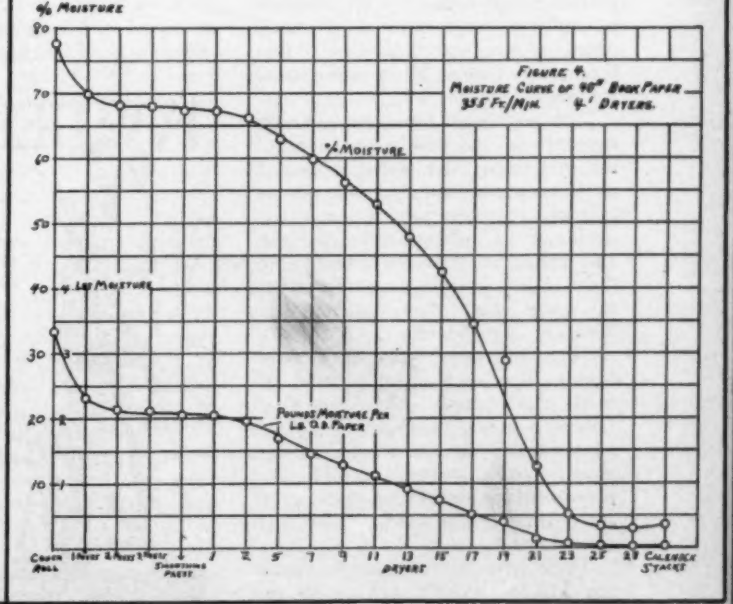
The refined stock flows to the regulating box, as on any other standard paper machine, to the mixing box, through some type of dirt removers, such as Centrifiners and/or screens, and to the head box.

The wire is of 60-70 mesh and up to 90 feet long. The width varies from 100 in. to 190 in., according to the grades to be made, and according to the age of the machine. It is questionable, however, if a high grade glassine can be made on the wide machines. The number of suction boxes varies from 5 to 12, and that of the presses from 3 to 5, the first press being equipped with suction. Glassine machines require more wire length, more suction boxes, and more presses than other paper machines, because the fiber surface made available for adsorption of water by intense beating is much larger than with stock of other grades. Figures 3 and 4 show the dewatering curve of a glassine paper and of a book paper. It can be seen that all four presses of the glassine machine do their part in water removal, and from the slope of the curve, it is to be expected that additional presses would be beneficial in water removal and improve the steam consumption of the drying section. On the book machine, on the other hand, only the first two presses are effective in removing water, and the third press is practically idling.

In order to obtain better water removal on the wire, the stock is heated at the mixing box. This reduces the viscosity of the water and thus allows for higher machine speed.

The drying of glassine and grease-





proof papers must be handled very carefully. If the temperatures are too high, the paper blisters or becomes unduly brittle. Emphasis is placed on the principle of removing water from the sheet by air between the individual drying cylinders and in the voids of the felt, rather than by boiling out when the paper is in contact with the roll surfaces. The diameter of the dryer rolls of a modern glassine machine is, therefore, only three or four feet, but the number of paper and felt dryers required is unusually large. The temperature used inside the dryers varies between 180 and 220 deg. Fahr.

From the dryers, the paper runs through one or two machine stacks and then onto the reel.

The quality of the sheet on the reel is judged by the blister test. This is carried out by passing the sheet over a candle. If the blister pops up high and white, the sheet was made from slow, highly beaten stock, while a low and partly charred blister results from relatively free stock. The results of this test are not yet expressed in numbers. It is entirely up to the individual observer to compare the blister of a sheet running on the machine with that of a standard paper.

During the rewinding and slitting process, the paper passes through a brush dampener, where enough water is sprayed on the sheet to bring the moisture content up to 25 to 30 per cent. This is necessary in order to lubricate the fibers sufficiently so that they slip easily during the supercalendering process for the attainment of closest possible packing of fiber to fiber under exclusion of air voids.

The supercalenders are conventional installations with from 14 to 16 rolls, the steel rolls being heated with steam. Enough steam is added to reduce the moisture content to 5 to 7 per cent.

Many efforts have been made in the past to wind the paper directly from the machine with a moisture content of 20 to 30 per cent, in order to improve the economy of the paper machine. Advantages of this procedure would be a considerable saving of steam, shorter dryer section, higher machine speed, stronger paper, and elimination of the dampener. Unfortunately, however, this problem has defied all efforts, the principal reason being that when paper is run with a high moisture content off the dryer, the moisture is not evenly distributed over the entire width of the sheet. The paper is wetter in the center than at the ends, which results in a final sheet of high transparency in the center and low transparency at the ends. Another consequence is that the rolls would have soft and hard spots, and would be unsuitable for smooth operation of further converting machines.

The extremely high degree of beating of the stock, coupled with severe supercalendering under high pressure, would produce a very brittle sheet, without any additional measures. To obtain flexibility, the paper is treated with plasticizers at one or two places, before it reaches the supercalender. The first dose of plasticizer is applied with a "size press" or a "dope roll," somewhere between the last press and the reel, and the second with the spray water of the dampener. The plasticizers most commonly used are glycerine, and sugar in the form of invert sugar or dextrose. Many attempts have been made to use other plasticizers with the special end in mind to replace the expensive glycerine with a material of lower cost. This problem, however, has not yet been solved satisfactorily.

The manufacture of glassine has followed quite conservatively conventional lines in its main features. There are, however, numerous signs indicating that some radical changes may take place in the future.

AMERICANS BUY BONDS—$100,000,000 A WEEK

An official announcement from the Treasury Department states that Americans are loaning Uncle Sam $100,000,000 a week. As collateral, the tall man with the high hat and the white beard is giving them Defense Savings Bonds and Stamps.

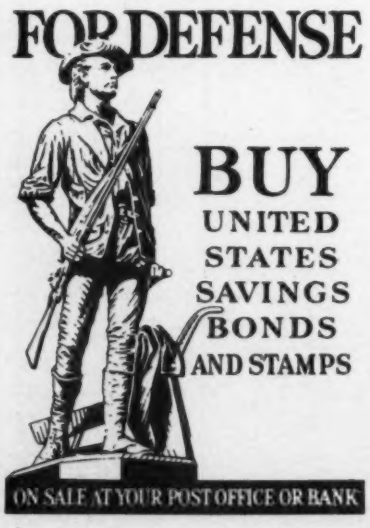
All over America, everything is geared to high speed; the Government is making unprecedented demands upon industry and individuals. This because the United States is preparing for peace—not for war.

Defense Savings Bonds are gilt-edge investments, and besides the value of the investment, the money is put to work to protect the freedom of our citizens. Most everyone has read full details of the different series of bonds and stamps, and how and where to buy them. But it is not too much repetition to quote the following from the Treasury Department:

There are three types of Defense Savings Bonds, designed to meet the needs of all people. The Series E, or "people's bond," however, is the one of particular interest to the average American man, woman and child. This investment preserves the character of the Savings Bonds which were put on sale March 1, 1935.

These Series E Bonds may be bought for $18.75, $37.50, $75, $375 and $750. They grow in value in ten years to $25, $50, $100, $500 and $1000, respectively. The annual investment yield is 2.9 per cent a year, compounded semi-annually, when a bond is held to maturity in accordance with a table of redemption values printed on the face of the bond.

Series F, also an appreciation bond, is issued at $74, $370, $740, $3,700 and $7,400. These bonds mature in 12 years to $100, $500, $1,000, $5,000 and $10,000. Series G is designed to meet the demand for a current income bond. These are issued at par and may be purchased in denominations of $100, $500, $1,000, $5,000 or $10,000. Series G Bonds bear interest of 2.5 per cent paid semi-annually by Treasury check.



In addition to individuals, these two series of bonds may also be registered in the name of any corporation, association, partnership or trustee.

If an individual should be pressed for cash, the Treasury will redeem the bonds before maturity. The full faith and credit of the United States Government are behind all of these bonds.

Defense Savings Stamps are for the convenience of purchasers who cannot afford to pay $18.75 at any one time. These stamps, on sale at post offices throughout the country and at many other outlets, are issued with handy devices for safe keeping. On the purchase of a 10-cent stamp, a card is furnished for mounting 25 of these stamps which may then be exchanged for $2.50 worth of the larger sizes. With the purchase of a 25-cent, 50-cent, $1 or $5 stamp, an attractive pocket album is given free in which to mount the stamps, which may be exchanged later for a bond.

Practical Papermaking Research

C. QUINCY IVES

▸▸▸ TO THE PRACTICAL OPERATOR in any industry, the assistance of one trained in observation, plus a practical knowledge of what results are needed, is of more help than highly technical brains which lack ability to convert such scientific knowledge to the everyday problems encountered. Trained experts in every line are essential to our complex and technical life.

After talking with some of the old-timers in the paper industry (or any industry, for that matter), one is strongly impressed with the fact that actual experience has a value comparable to theoretical knowledge. A good groundwork of technical knowledge broadens a worker in any line of endeavor, but only after years of actual experience does he acquire skill.

The author recalls an old friend in charge of the Engineering Department of a leading university who once stated that in his opinion, engineering was 98 per cent "horse sense" and 2 per cent books. He contended further that too few graduates of technical schools learned to think constructively, but were prone to accept as "gospel" the textbooks studied.

The word "empirical" is defined as "depending on experience or observation alone, without due regard to science and theory . . . " For your consideration, then, meet a hypothetical character, the "Empirical Researcher."

Research as carried out along empirical lines does not approach a subject in the usual manner; that is, from the scientific angle exclusively. Through actual observation, and maintaining an open mind, such a researcher endeavors to visualize a need, then goes on the premise that just because a thing has been done in a certain way for years is no reason at all why it could not be done better some other way. Whether such a change is mechanical, chemical, or be brought about through specially directed efforts of personnel is a matter which depends wholly upon the subject at hand. It should be clearly a matter of the problem and its need rather than a highly technical digest of the subject.

Collaboration between the Empirical Researcher and the Technical Expert is absolutely essential. Without such collaboration, few major problems would be solved permanently and satisfactorily. It is, however, just as essential that the subject be approached from the "needs" angle, which, of course, includes such phases as: will it save time; will it make the goods better; will it make them more salable, cheaper; or will they appeal to the ultimate buyer as something new and novel?

There comes to mind a typical incident of how this subject was approached. A company which manufactured and sold a tremendous quantity of starch products never had entered the paper manufacturing field to any great extent. This was because other concerns had for years specialized in this field and had a large following. However, this company decided to try for a share of this very desirable business and called in an independent researcher. In developing the subject, this man found that by calling on the paper-making trade, they would doubtless get some business, but it would be obtained only through highly competitive methods. Undaunted, he fell to thinking what could be done to lift his company's product out of the commonplace. It seemed a hopeless task, but this Researcher thought back over years of practical experience in the use of starches in paper mills, trying to recall something that had been either difficult or troublesome to him and his associates. Then he remembered one thing: Starch, being a light powder, was more or less hard to handle. This then suggested to him the possibility of packaging. The result was that his company packed the starch in small bags—paper, of course, which were introduced to the paper furnish without weighing or the necessity of other preparation. This, of course, required considerable collaboration with the technical staff, but after long experimentation, a product was developed that could be used without further preparation, such as cooking, etc. This product was put on the market and has brought heavy sales.

A similar illustration is the story of the transition of stiff corrugated paper from a rigid material to a product having all the cushion protection of corrugated paper, while at the same time having enough flexibility to permit its being used to wrap bundles without cutting or creasing beforehand. In approaching this subject, the Researcher first put the proposition up to himself this way: Suppose corrugated paper wasn't stiff but flexible? What then? His reasoning followed the opposite of the evidence at hand and brought success from this reversal. The product today is used by many of the largest companies who up to a short time ago felt that their shipments could only be protected by using the old rigid type of corrugated paper.

The germ of invention is in most of us. Few, however, have the time, or perhaps the inclination, to develop the latent qualities which remain dormant in many throughout a lifetime. Due to a lack of specialized training, a great many ideas are fostered which have little or no value to humanity. The Patent Gazette is evidence of many ideas which, to the inventor, looked wonderful, but when analyzed by the practical man are obviously impractical or downright useless.

In the mind of the Empirical Researcher there is always that inquisitive streak—"Suppose it were done differently?" This might be applied to the manufacture of paper. The principle of papermaking is the same as that followed by the Chinese two thousand years ago. The fiber was then put into high dilution with water and then deposited upon a screen to form a matted mass which became a piece of paper. It still is—in a highly refined manner, of course. Then look at the quite marvelous and intensely interesting process as developed by a leading technical institute whereby a sheet is made without fiber at all—from clay (Alsafilm). Then there is the wasp who makes "paper" without any screen. The thought behind these very evident examples is not that the manner in which it is made commercially, today, is not perfectly satisfactory, but rather that, at best, we humans are prone to be creatures of habit and it is for the Empirical Researcher to visualize, and then co-operate with highly skilled technical brains, to the evolvement of a new way—if it is a better way.

PAPER SKETCHES

AS EARLY AS 1630 LE FRANCOIS, A FRENCHMAN, STARTED A FACTORY AT ROUEN, TO IMITATE SAMPLES OF COLORED WALL PAPER SENT TO FRANCE FROM CHINA BY GALLIC MISSIONARIES..

A SCARCITY OF PAPYRUS IN ROME IS SAID TO HAVE BEEN RESPONSIBLE FOR THE INTRODUCTION OF THE **WAX TABLET** AS A WRITING SURFACE...

ANILINE DYESTUFFS, DISCOVERED IN 1856 BY SIR WILLIAM HENRY PERKIN, WERE NOT USED BY THE PAPER INDUSTRY TO ANY EXTENT UNTIL ABOUT 1890

A PROCESS FOR "FINGER PRINTING" THE POROSITY OF PAPER, RECENTLY DEVELOPED BY B.W. NORLANDER OF THE GENERAL ELECTRIC RESEARCH LABORATORY, CONSISTS OF PASSING MERCURY VAPOR THROUGH A TEST SAMPLE OF PAPER WHICH IS PRESSED AGAINST PRINTING PAPER COATED WITH SELENIUM SULPHIDE. THE MERCURY VAPOR EMERGING THROUGH THE PORES OF THE PAPER SAMPLE DARKENS THE SELENIUM SULPHIDE COATING OF THE PRINTING PAPER, THUS PRODUCING A PORE PATTERN OF THE SAMPLE, A GRAPHIC RECORD OF ITS POROSITY.

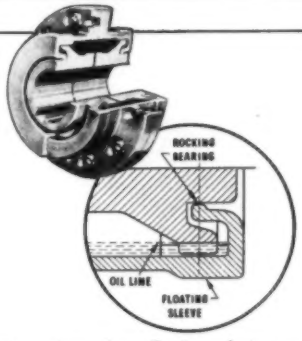
"Shrinking 'em on, eh . . . doesn't heat damage the seal?"

"Nope . . . these couplings have no perishable parts . . . they're Genuine 'FAST'S'"

Heat necessary for installing does no damage to Fast's Couplings, for they are all steel. Fast's exclusive design eliminates all perishable parts. The dust and moisture proof seals are established by metal to metal rocking bearings and are not damaged by heat.

To avoid trouble, in installation as well as in use . . . specify *genuine* Fast's Couplings on the machinery you purchase.

KOPPERS COMPANY
BARTLETT HAYWARD DIVISION
BALTIMORE, MARYLAND



These views show Fast's exclusive construction. The load-carrying surfaces are protected against wear by a positive film of oil. This oil is kept permanently clean by rocking bearings, which make precise metal-to-metal contact, and are in the one position where they form permanent dust-proof and moisture-proof seals. This feature is found only in *genuine* Fast's Couplings.

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- ☐ "Applications of D-H-S Bronze"
- ☐ "Piston Rings for Compressors"
- ☐ "Piston Rings for Diesel Engines"
- ☐ "How to Order Piston Rings"
- ☐ "Automotive Ring Set-ups"
- ☐ "Painting of Creosoted Wood"
- ☐ "Pressure-treated Timber"
- ☐ "Koppers Coal for Industrial Use"
- ☐ "Roofing Specifications"
- ☐ "Membrane Waterproofing"
- ☐ "How to Prevent Termite Damage to Buildings"
- ☐ "Bituminous-base Paints"

SUPERINTENDENTS *Hold 22nd Annual Convention*

▶▶▶ DELIGHTFUL WEATHER, BEAUTIFUL SCENERY, and a very friendly atmosphere combined with a well-planned program to make the 22nd Annual Convention of the American Pulp and Paper Mill Superintendents Association one of the most enjoyable and profitable annual meetings of the association.

The dates of the convention were June 17, 18, and 19, 1941; the place of conclave, the Poland Spring House, Poland Spring, Maine.

This convention was the second annual convention of the association to be held at Poland Spring, the previous convention dating back to 1934. So successful were both of these meetings that it leads one to believe there is more than just publicity in the statement *"Maine—The Place to Live, Work and Play,"* the title of a publication issued by the Maine Development Commission to acquaint readers with some of the charm of the "Pine Tree State."

Attendance at the convention was so large that housing facilities of the Poland Spring House were taxed to overflowing, so several other resort hotels of the vicinity were thrown open to accommodate the crowd. Advance registration permitted all of the necessary housing arrangements to be completed before the arrival of delegates and guests, thus making all details incident to registration as simple and convenient as possible.

Opening Session

The convention was called to order by Arthur B. C. Drew, president of the association, shortly after 11 o'clock on the morning of June 17.

Following the invocation by Rev. H. E. Townsend, D. D., pastor, Universalist Church, Westbrook, Maine, Robert L. Eminger, secretary-treasurer of the association, read the names of the members of the association who had passed on since the 21st Annual Convention. Those listed in this necrology were: *William G. Berry, Charles E. Conley, Peter J. Maasbyll, Henry E. Ostenson, Gabriel M. Prevost, Percy Sandwell,* and *Wallace E. Shymanski.*

The "In Memoriam," service closed with prayer by Dr. Townsend.

An address of welcome to the association was given by Hobart Kilgore, Selectman, Town of Poland. In a few well-chosen remarks, Mr. Kilgore made welcome everyone in attendance at the opening session, as evidenced in the response of Oscar Stamets, who referred to the convention of seven years ago at Poland Spring and then remarked, in part, "The fact that we have returned must be proof to you that we think the great papermaking state of Maine is an ideal place for us to hold our meetings."

The President's Message

Arthur B. C. Drew, in presenting the President's Message, cited the contribution of the Allied Industries to the success of the association meetings; recalled the high standard of papers presented before the divisional meetings; reported that to date some sixty-odd firms had become Industrial Affiliate members; lauded the work of Robert L. Eminger as secretary-treasurer, and George W. Craigie as field secretary, and expressed appreciation for the co-operation given to the association's work by J. L. Riegel, president, and E. W. Tinker, executive secretary, of the American Paper and Pulp Association, as well as by The Technical Association of the Pulp and Paper Industry, and the Salesmen's Association of the Paper Industry. In addition, Mr. Drew expressed appreciation for the co-operation of the *Paper Mill News* (official organ of the association) and other trade papers.

Oscar Stamets
Newly elected president of the American Pulp and Paper Mill Superintendents Association.

Mr. Drew made a plea for good association membership by the use of the following bit of free verse.

Are you a good Association Member,
The kind that would be missed;
Or are you just contented,
Your name is on the list?
Do you attend the Divisional Meetings,
And mingle with the flock;
Or do you stay at home
To criticize and knock?
Do you take an active part
To help the work along
Or are you satisfied
To only just belong?
Think this over, Brother;
You know right from wrong.
Are you an active member,
Or do you just belong?

In concluding his message, Mr. Drew expressed thanks to the association for the honor it had bestowed upon him, and for the support and friendship shown him by the membership.

Appointment of Committees

Following the presentation of his message, Mr. Drew, before concluding the first session of the convention, appointed the following committees.

Auditing—Oscar Stamets, Grover Keeth, Raymond Barton.

Resolutions—Killey E. Terry, Harry Weston, Arnold J. Weller.

Nominating — William Brydges, Charles Champion, H. H. Harrison, Luther Beighey, David Hayes.

AFTERNOON AND EVENING OF FIRST DAY

John E. Hyde, vice president, S. D. Warren Co., was toastmaster, and Hon. Sumner Sewall, Governor of Maine, speaker at the Joint Luncheon on the first day of the convention. Governor Sewall stressed the need for co-operation of business with the government (state and federal) and discussed to some length certain phases of the broad subject of forestry.

The afternoon of the first day was given over to a general conference before which three papers were presented.

Using Cypress in the Paper Mill

The first of these papers was entitled *"Proper Use of Cypress in the Paper Mill"* and was the subject of

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Today, more than ever, papermakers are insisting on General Chemical Alum because they can rely on its uniformity to maintain the proper pH and so achieve maximum filler retention.

General Chemical's careful attention to all details in production with constant laboratory control is your assurance of purity and uniform quality.

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This Division is manned by a staff of technical experts thoroughly conversant with the use of chemicals in the Paper Industry. Inquiries for information are given prompt attention —and where advisable, a representative will be assigned to work on the problem with the customer in his own plant.

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Pacific Coast Sales Offices: San Francisco • Los Angeles

Pacific Northwest Sales Offices: Wenatchee (Wash.) • Yakima (Wash.)

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John Reno, Florida-Louisiana Red Cypress Company, Jacksonville, Florida. In his remarks, based primarily on facts given in a mimeographed set of specifications distributed by the speaker to the audience, Mr. Reno stated that tank grade (all heartwood) genuine Tidewater Red Cypress should be used for suction box sides and bottoms and for unlined tanks, tubs, rifflers, vomit stacks, and screen vats—No. 2 Common all heart Tidewater Red Cypress for tanks, boxes, wet broke trucks, etc. that are to be lined with a nonporous lining; also for hoods, covers, partitions for rifflers, and clay mixing tanks, —for floors, platforms and sub-floors where decay conditions are present,— and for roofs; No. 1 Common 85 per cent heart timber grade Tidewater Red Cypress for joists, stringers, beams, and window frames; clear heart Tidewater Red Cypress for couch rolls, mill sash, and beater washer sash; and No. 3 Common all heart Tidewater Red Cypress for baffles for stock rifflers. The importance of proper specifications in buying cypress lumber or in buying items produced from it was stressed by Mr. Reno. In this regard, he also suggested that the purchaser should always reserve the right to have an inspection by an official inspector of the Southern Cypress Manufacturers Association.

Methods of Water Purification

A. F. McConnell, Permutit Company, New York, presented the second paper of the session. His subject was *"Current Methods of Purifying Water for the Paper Mill."*

Objectionable waters encountered most frequently in the paper and pulp industry, said Mr. McConnell, are those that are turbid, those that are highly colored and those that contain appreciable amounts of iron, manganese, organic matter and hardness. Among the items of water purification equipment that were discussed in some detail by Mr. McConnell were: Spaulding Precipitator, sand filters (pressure and gravity), hot lime and soda softeners, and Zeolite softeners.

Labor Problems

"Recent Developments in Labor Problems" was the subject of Alan G. Goldsmith, Vice President, The Mead Corporation, Chillicothe, Ohio, the last of the three speakers of the afternoon session of the first day.

A few of the highlights of Mr. Goldsmith's remarks were the following:

"It does not follow as so many think that unionization means labor troubles, and that labor troubles eventually mean strikes. In many cases, and this is particularly true in our industry, labor leaders are men of high character and employers and managers and superintendents with advanced thinking, have been able to handle situations as they arise in a considerate, thoughtful and intelligent manner.

"Obviously, in our industry as well as in others, the problem has been complicated by difficulties outside of our control. We have two contending forces in organized labor, each endeavoring to organize in its own interest, not always reflecting the best interests of the workers themselves. We all know that the workers' interests and the employers' interests are identical, that any effort made either by the employer or by union leaders to deny this will only result in grief for both, and that if this idea is kept at the fore in any discussion, the proper solution is bound to be obtained.

"The question of employing and dismissing labor, formerly so simple, has now become one involving thorough and up-to-date knowledge of intricate laws and decisions of governmental agencies. Collective bargaining covers a large majority of the employees in our industry. The superintendent today who does not keep apace of the times in this tremendously important branch of his activity, and who does not apply this knowledge in a conscientious and intelligent manner, is evading to a great degree the responsibility of his position."

Stag Dinner Closing Event of First Day

A stag dinner, with C. W. Stewart of Parker-Young Company, Lincoln, N. H., as Master of Ceremonies was enjoyed by the men on the evening of the first day, while the ladies dined and were entertained by Henry Gerald with a feature entitled "Psychology in Action" and which included demonstrations of mental telepathy, power of will, and other similar hypnotic phenomenon.

The entertainment program of the stag dinner featured Bertrand L. Shurtleff who put on a demonstration entitled "Wrestling Revelations," and in which he revealed some of the "inside stuff" that professional wrestlers make use of to satisfy their audiences and to keep them interested in professional wrestling.

Two young men, professional boxers, also put on a short bout that was refereed by Joe Dow of Castle & Overton, Inc. This bout, like the demonstration of Mr. Shurtleff, held the interest of everyone privileged to see it.

FOUR GROUP MEETINGS

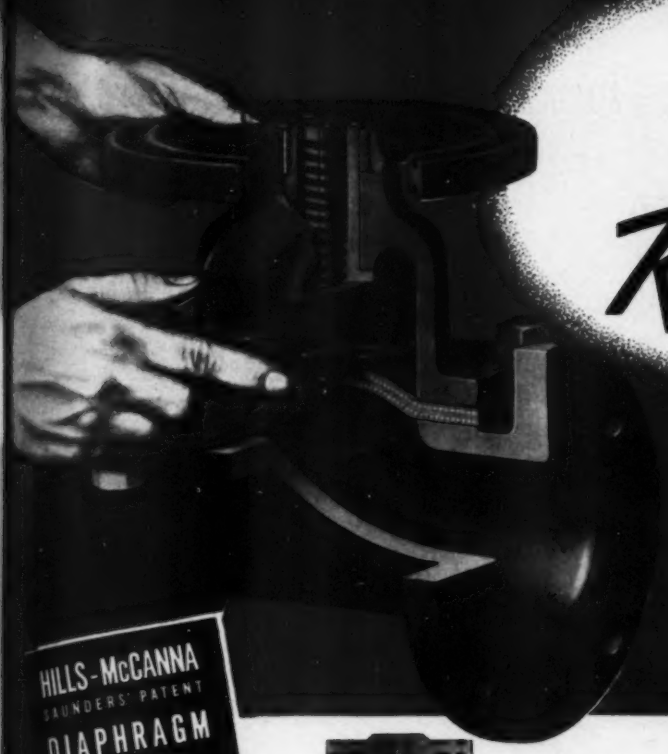
The program of the second morning of the convention was given over to four group meetings—Board, Fine Papers, Newsprint and Wrapping, and Tissue. Ollie W. Messner, Robertson Paper Box Company, Montville, Conn., was chairman of the Board meeting; Daniel J. Walsh, Parker-Young Company, Lincoln, N. H., of the Fine Papers meeting; George E. Fuller, St. Croix Paper Company, Woodland, Me., of the Newsprint and Wrapping meeting; and Benjamin E. Teale, Crane Company, Dalton, Mass., of the Tissue meeting.

The Board Group Has Diversified Program

On the program of the Board meeting was an extemporaneous, illustrated talk by E. M. Root, Dilts Machine Works, Fulton, N. Y., on *"The Dilts-Cowles Hydrapulper, Its Design and Application;"* a paper by Philip H. Goldsmith, Pusey & Jones Corporation, Wilmington, Del., on *"Development of Stream-Flow Vat System;"* and a motion picture entitled *"Bringing the Cylinder Machine Up to Date,"* shown by Leon E. Smith, Downingtown Mfg. Company, Downingtown, Pa.

In the question period following the remarks of Mr. Root, it was brought out that the Hydrapulper in a continuous system operates on stock at a consistency of 1¾ per cent air dry; that rags removed from Hydrapulper on filler stock can be used for rag stock furnish (one Southern mill having tried but deciding that the trouble and expense of handling the rags for re-use wasn't worth the money); that possible installations involving the use of rolled pulp must be considered individually; that it is imperative, in a way, that the Hydrapulper be operated continuously for filler stock production, principally because of continuous removal of junk and rags; and that, in general, power consumption on Hydrapulper systems for the continuous preparation of filler stock amounts to 65 to 75 per cent of that used on old type systems.

Mr. Goldsmith related that the first Stream-Flow installation started in operation in January, 1940, in the Waterville mill of the Hollingsworth and Whitney Company; and that this installation consisted of four Stream-Flow Vats (48 in. diam. by 134 in. face) and four Up-Flow head boxes. He described both the box and the head box; then stated that the first Stream-Flow System on .009 was in the Harriman, Tenn., mill of the Mead Corporation (started operation in September, 1940); that the Union Mills Paper Manufacturing Company, manufacturers of a large variety of very high-grade kraft and rope sheets for special purposes, made use of the Sys-



10 Reasons Why...

THIS VALVE EFFECTIVELY HANDLES CHEMICALS, STOCK, LIQUORS, ALUM, CAUSTIC, AIR OR WATER

HILLS-McCANNA
SAUNDERS' PATENT
DIAPHRAGM VALVES

ISOLATED FLOW

1 The flow chamber is sealed from the working parts. Slugs of grease or any foreign matter cannot drop down from the bonnet to cause contamination.

PROTECTED WORKING PARTS

2 Operating parts are never in contact with the thru-put, hence freezing, sticking, clogging or corrosion are prevented.

NO STUFFING BOX

3 No more stem-packing with this valve. Lack of stuffing box saves on maintenance . . . prevents costly leakage. Valve can be installed without regard for pressure side.

STREAMLINED FLOW

4 Streamlined design eliminates pockets, grooves and other obstructions which would prevent free flow, cause clogging and operating difficulties.

LOW PRESSURE DROP

5 Opening across weir is oval shaped, reducing frictional resistance to a minimum. Pressure drop is only approximately ⅓ that through a globe valve.

NO MACHINED SEATS

6 Self-compensating resilient diaphragm eliminates the need for machined seats. The valve seat is rough cast and never requires grinding.

TIGHT SHUT-OFF

7 A bottle-tight seal is always obtained because the resilient diaphragm forms a new seal at each closing, enveloping any foreign settled matter.

FEW SIMPLE WORKING PARTS

8 There is nothing complicated about the valve. It has but few loose-fitting working parts which anyone can dismantle or assemble with ease.

LOW MAINTENANCE

9 The long-life diaphragm is normally the only part needing replacement . . . cost is far less than maintenance required for reworking seats, discs, etc.

COMPLETE CORROSION PROTECTION

10 Valves can be furnished in over 27 different body materials. A large assortment of diaphragms for specific services is carried on hand at all times.

NOW USED IN HUNDREDS OF MILLS *in these Services*

Stock lines
Alum lines
Chlorinated water
Sulphate liquor
Sulphite liquor
Black liquor
Caustic Soda
Bleach solutions
Compressed Air
Clear or Turbid Water

WRITE FOR CATALOG

or describe your service and we will offer comprehensive suggestions.

HILLS-McCANNA CO.

2433 NELSON STREET - - - CHICAGO

tem to overcome a formation bottleneck; that the first installation on roofing is under process of erection at the New Orleans mill of the Flintkote Company; that Crocker Burbank and Co. Association has ordered a Stream-Flow wet end consisting of four systems with molds 48 in. diameter by 104 in. face; and that one boxboard mill has under construction three Stream-Flow Vat Systems with molds 48 in. diameter by 106 in. face for use in the top liner, under liner and back liner positions.

Fine Papers Group Hears Three Papers

Three papers were presented before the Fine Papers group meeting; namely, *"A New Means for Reclaiming Pulp,"* by Theodore P. Steinmetz, Norwood Engineering Company, Florence, Mass.; *"Sandy Hill-Bertrams Flow Distributor Control of Approach Flow to the Fourdrinier,"* by Allen A. Lowe, Sandy Hill Iron & Brass Works, Hudson Falls, N. Y.; and *"The Effect of Improper Drying on Quality,"* by Frederick C. Stamm, Armstrong Machine Works, Three Rivers, Mich.

Pulp Reclamation By New Method

Among the highlights of Mr. Steinmetz's paper were the following:

"Methods for reclaiming fiber from printed waste paper are generally known as deinking systems.

"The Norwood system for reclaiming pulp is based upon considerations that the problem is essentially mechanical in two respects. First, the method of disintegrating waste paper into suspended fiber must be such that the fiber is undamaged. Second, the mechanical means for washing must take advantage of the fact that the materials to be removed are lighter in gravity than cellulose fiber.

"Chemicals are used in this new system for three purposes:

1) To cause fast penetration of the stock.

2) Emulsify oils, rosins and waxes.

3) De-flocculate and disperse solid particles.

"The output of one reclaimer is six tons daily on a twenty-four hour basis.

"Operating costs depend upon quantity of production as well as type of stock processed. The reclaimer alone requires 40 hp. per ton of pulp produced together with 20,000 gallons of water per ton. A duster requires an additional 5 hp. as does the soak chest. Chemical costs vary from $1.50 per ton for news up to $3.00 for mixed colored ledger."

Stock Flow Distributor Described

Mr. Lowe, in his paper, presented the theory of the Sandy Hill-Bertrams Flow Distributor, details of current installations, and results which have been observed to date.

He stated, in part, that the multiple manifold method is the principle incorporated in the distributor; that no part of the whole flow has an opportunity to get itself into a pocket where it can linger and floc; that the following grades have been made on machines equipped with the flow distributor—toilet tissue, waxing tissue, newsprint, telephone book, poster groundwood specialties, sulphite specialties, waterleaf and absorbent papers, book and offset, sulphite index, sulphite envelope, and kraft envelope; that the highest consistency encountered so far has been slightly over one per cent in the headbox—the lowest, 2/10 of one per cent; that the flow distributor should be of greater interest to the multiple cylinder machine operator than to the fourdrinier man. Mr. Lowe also cited a number of papermaking problems which he felt had been solved, in a great measure, by the use of the flow distributor. Among the accomplishments for the flow distributor that he mentioned were: reduction of slugs from headbox deposits, reduction of shifting of sheet, reduction of streaks, and reduction of variation of weight and caliper across sheet.

Cockle and Curl

Mr. Stamm stated, in his paper, that both cockle and curl are fundamentally due to an unequal tension in the sheet, and that this tension is set up during the process of drying. He added that cockling and curling can be eliminated by proper control of temperatures during the drying but sometimes it is necessary to correct some of the other operating troubles before the full benefit of this type of control can be appreciated.

News, Wrapping and Tissue Groups Have Round Table

The group meetings on Newsprint and Wrapping, and Tissue confined their programs to a round table discussion of questions.

Play and More Play

A novel feature of the program of the second day was an outdoor picnic in the grove immediately adjacent to the hotel. The picnic brought the men and ladies together for a most informal and delicious repast in an atmosphere of Maine woods that lent even more enjoyment to the picnickers.

The picnic was the starter for an afternoon and evening of relaxation and fun. It was followed by sports—the most important of which probably was the golf tournament—dancing on the lawn in front of the Poland Spring House by the Dorothy Mason Dancers, a joint dinner, and was concluded with dancing in the ball room. J. W. Hemphill, of Johns-Manville, New York, was toastmaster at the joint dinner. During the dinner meeting the sports prizes were awarded, Charles Ludwig of the Mead Corporation winning for the second time the cup donated in 1940 by the Hercules Powder Company for low gross score in the Superintendents golf tournament. Other prizes also were given to: H. T. Randall, Champion Paper and Fibre Company (second low gross); G. H. McGregor (third low gross); H. P. Baldwin, Consolidated Water Power & Paper Company (fourth low gross); John Murray, Racquette River Paper Company (first low net); Del Gardner, Great Northern Paper Company (second low net); Roy Frisbie, Westfield River Paper Company and C. R. Johnson, Consolidated Paper Company (tieing for third low net).

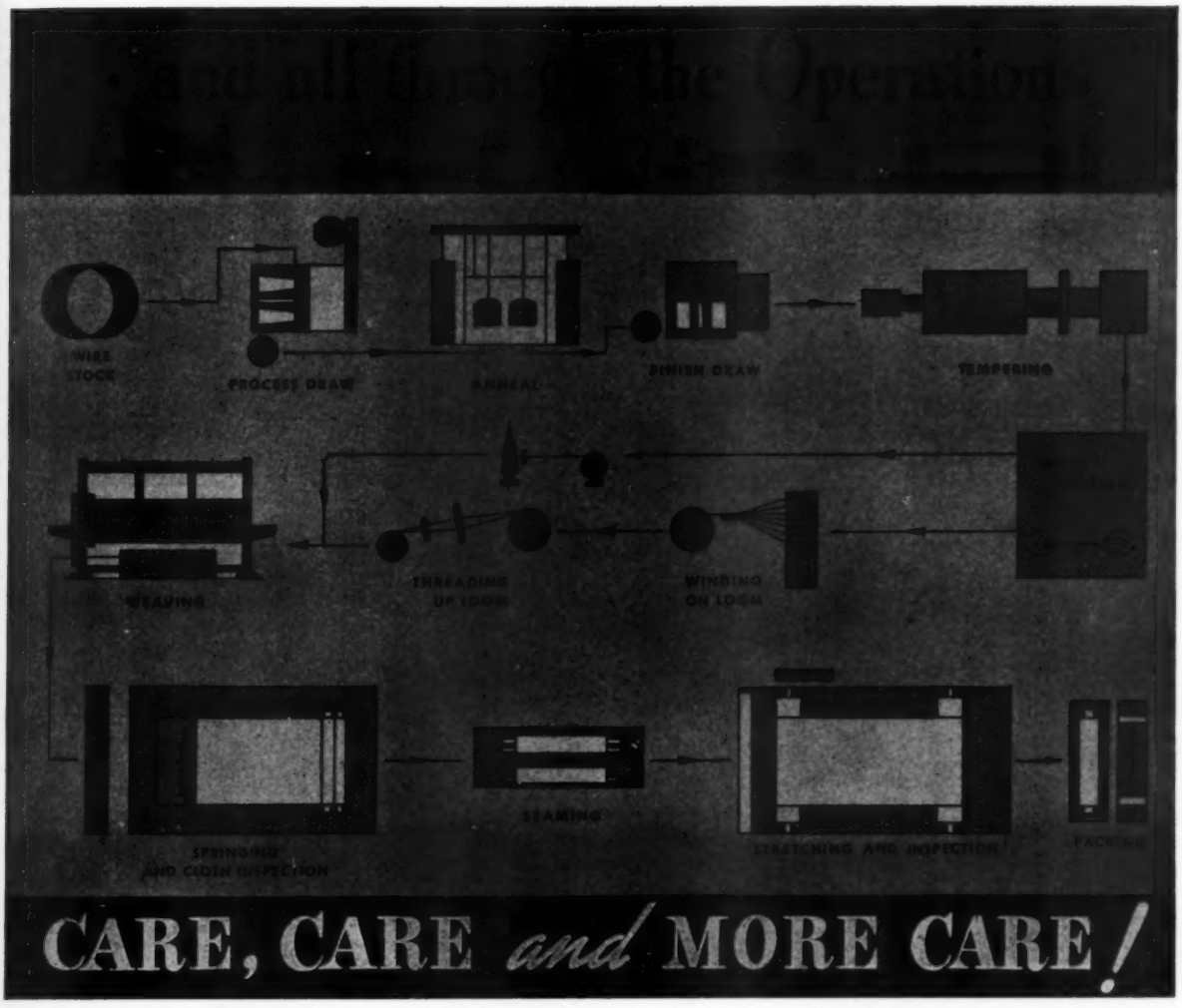
The winners of prizes for the Salesmen's golf tournament included: Tom Stirling, Hercules Powder Company (first low gross); A. F. Burke, E. F. King & Company (second low gross); Douglas Sutherland, Sutherland Refiner Company and R. L. Erving (tieing for third low gross); Norman Neil, W. S. Tyler Company; and W. W. Cronkhite, General Electric Company (tieing for first low net); Harry Frost, Sinclair Company (second low net); P. B. Butler, and Warren Chilson, Sandy Hill Iron & Brass Works (tieing for third low net).

H. J. Hoolihan, Port Huron Sulphite and Paper Company, and C. E. Center, Westinghouse Electric & Mfg. Company, were the high scorers, in the order given, for the Superintendents and the Salesmen.

Prizes for pitching horseshoes were won by George Pennock, The Bagley & Sewall Company, and by P. A. Collins, Warren Steam Pump Company.

Other sports scheduled on the program for the afternoon included bowling on the green, soft ball and skeet shooting.

Entertainment during the evening program was in the hands of Bob Gorrie of the S. D. Warren Company, Cumberland Mills, Maine, who with a number of assistants impersonated Hitler, Churchill, and President Roosevelt; and also the radio character "Dr. I. Q.," actually giving out real silver quarters to the men and women successfully answering the questions put individually to them.



From beginning to end, the making of wire cloth at Lindsay is under close laboratory control.

Every Fourdrinier or cylinder wire moves through its cycle at Lindsay on the principle that there can be no "back-tracking" to recapture quality. You cannot neglect a detail and trust to "make up for it" later in the manufacturing process. Every step must contribute a sure, fixed something to a standardized progress. Laymen are surprised at the number of men assigned to certain operations; at the great precaution used, for example, in rolling up and boxing; at the ever-growing volume of technical data we accumulate, interpret and apply . . . The wire cloth manufactured by our industry in 1941 must be better than that which was produced in 1940.

THE LINDSAY WIRE WEAVING COMPANY

"Serving the Paper Industry since 1903"

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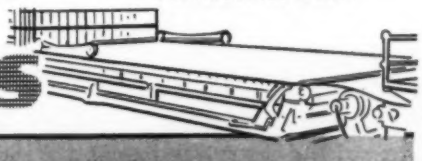


Lindsay **WIRES**

FOR PAPER MILLS

Some of the questions were miscellaneous, but some had a very definite papermaking angle.

MORE GROUP MEETINGS

The morning of the third and last day of the convention was given over to four regularly scheduled group meetings—chemical pulp; coated papers; finishing, storing and shipping; and plant and power engineers; and to a continuation meeting of the board group of the day before.

Chemical Pulp Group

Two papers were presented at the chemical pulp meeting, the chairman of which was Stanley G. Blankenship, Port Royal Pulp and Paper Company, Ltd., New York.

The first of these papers was a joint contribution of Dr. T. E. Werner and Rudolph T. Greep of the S. D. Warren Company, Cumberland Mills, Maine, and was presented by Mr. Greep. The subject of the paper was *"The Cooking of Poplar and Hardwood by the Soda Process."*

The second paper of the chemical pulp meeting covered *"Some Further Experiences with Forced Circulation"* and was presented by D. C. Porter, Kimberly-Clark Corporation, Neenah, Wisconsin.

Six Papers Presented at Coated Papers Group

Dr. Frederick Frost, S. D. Warren Company, Cumberland Mills, Maine, was chairman of the coated papers meeting. The program of this meeting was a very full one. It included the presentation of six papers: namely—

"Knowns and Unknowns in Coating Colors," by Dr. Ben W. Rowland, The Institute of Paper Chemistry, Appleton, Wisconsin.

"Types of Starches Available for Coating and Their Characteristics," by Glenn Price, National Starch Products, South Boston, Mass.

"Selection of Calender Roll," by Ward O. Wheeler, Wheeler Calender Roll Company, Kalamazoo, Mich.

"Frothing of Coating Mixtures," by E. Sutermeister, S. D. Warren Company, Cumberland Mills, Maine.

"Problems of High Speed Drying," by George R. Marsh, C. J. Merrill, Inc., Portland, Maine.

"The Problem of Evaluating Coated Bodystocks," by J. J. Friel, Dill & Collins, Philadelphia, Pa.

Dr. Rowland gave consideration to the water-holding capacity of the color, the viscosity behavior of the color, the receptivity of the raw stocks and the colloidal phenomena that accompany the application of color to stock.

Mr. Price in his paper reviewed the commercial aspects of coating starches rather than the results of fundamental research. He stated that present day coating starches when used with a knowledge of their natural limitations and adjustments made to balance their chemical and physical differences can be used in the great majority of cases as a replacement for casein. In considering the natural limitations, he brought out that the major point of difference between starch and casein coatings is waterproofness. Several other differences were outlined.

Mr. Wheeler stated that the most satisfactory calender roll to run is as soft a roll as will stand up in service—that the harder roll crushes the sheet and does not deform to suit any irregularities in the sheet so that it takes more sanding time, as well as being a harder roll to sand.

Mr. Sutermeister related that the surface of a coated paper sometimes shows a defect which is known as froth pits or pin holes; that measurements of froth pits show that they vary from very small up to 0.064 mm. in diameter; that the chief cause of frothing in white or slightly tinted coatings seems to be the adhesive used in the mixture; that the paper coater can do two things to minimize foam—avoid violent mechanical agitation of a nature to whip air into the mixture and use some anti-foaming agent which makes the small bubbles break more rapidly, either in the mixture or after it is spread on the paper.

Mr. Marsh spoke on some of the practical considerations or problems which confront both the manufacturers of fast dryers and the superintendent who plans to install a 600 ft. to 800 ft. modern machine in his mill.

Mr. Friel, in presenting his paper, related that basis weight and Densometer variations affect dry curl, wet curl, and wrinkling behavior at the coater; that the factors affecting dry curl should not exceed a uniformity factor of 3.5 (each or combined), at which rating a sheet curls only slightly; and that the factors (each or combined) affecting wet curl should not exceed a uniformity factor of from 2 to 7 for good operation, depending upon the density ratio. He added that high waste, lost time, lost production, and high seconds will result whenever bodystock to the coaters is not uniform in basis weight and Densometer.

Finishing, Storing and Shipping Group

W. Douglas Somerville, Eastern Corporation, Bangor, Maine, was chairman of the Finishing, Storing and Shipping Meeting and before which three papers were presented.

Paper Shipping Methods

The first of the three papers covered *"The Bracing of Rolls, Skids, and Bundles of Paper for Carload Shipment,"* and was presented by J. G. Bucuss, Strapping Division, Acme Steel Company, Chicago. Mr. Bucuss introduced his remarks by stating that every car of paper arriving at your customer's plant today without damage builds good will and profit. He then called attention to and explained the several methods of bracing skids, rolls, and bundles. The methods described included the full-floating, semi-floating, and horizontal anchor or fixed for skid bracing; the skid check, fiber cradle, vertical anchor, and horizontal anchor for rolls; and the horizontal anchor for bundles.

Government's Packaging Requirements

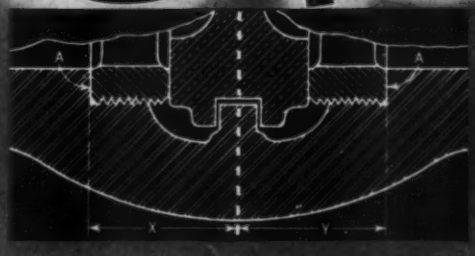
Ernest W. Spencer, assistant technical director, U. S. Government Printing Office, Washington, D. C., was second on the program with a paper entitled *"Governmental Requirements for Packaging Papers."* In this paper, Mr. Spencer mentioned an increasingly strong trend toward receiving governmental printing papers on skids, prompted both by economy and convenience in handling; called attention to the apparent lack of uniformity in the method of building skids; cited certain precedents in packaging standards; and explained the requirements to be met in the packaging of paper for governmental use. The requirements covered packaging; weight, banding, and marking; wrapping; cores; labels and memorandums; and carloading.

Mr. Spencer also gave some suggestions for improving the construction of skids as well as on wooden box construction.

Damage to Newsprint—How to Prevent It

"The Prevention of Damage to Newsprint Paper," the last of the three papers to be presented before the Finishing, Storing and Shipping Meeting, was the subject of R. A. Fasold, Special Representative, Freight Claim Division Association of American Railroads, Chicago. Mr. Fasold first outlined how the prevention of loss and damage functions on our American Railroads. He then cited a recent report of the National Committee on Prevention of Freight Loss and Damage on "Newsprint Paper," quoting certain parts of it. In the quoted portion of the report, it was stated that crushed cores and out-of-round rolls are among the principal causes of complaint; that deformation of the aver-

DISC GUIDING GOES MORE THAN HALF-WAY



The accurately machined guide ribs in the body are a positive center line for machining the shoulders against which seat rings are screwed into place. When renewing seat rings just screw them in—they're bound to fit perfectly—no scraping, lapping or machining necessary—then drop in the disc. That's how precision workmanship saves you time and money!

in LUNKENHEIMER IRON BODY GATE VALVES

THE GUIDE RIBS IN THE BODY AS WELL AS THE GUIDE CHANNELS IN THE DISC ARE ACCURATELY MACHINED.

No half-way measures go in manufacturing Lunkenheimer Iron Body Gate Valves. With disc guiding, for example, not only are the guide channels in the disc accurately machined, but *the guide ribs in the body as well*—to extremely close tolerances.

With this thorough method of disc guiding, thrust of the disc is always against guides and not against seat faces. Chattering and dragging on seats are eliminated assuring tight closure and longer seat and disc life. Fewer repairs and replacements are necessary, materially reducing maintenance expense, with resultant lower valve cost.

Lunkenheimer Iron Body Gate Valves also embody many other refinements which place them in a class above ordinary gate valves. Exceptionally heavy bronze seat rings; disc of true solid construction; new development in stem bronze with its extra resistance to wear; non-corrosive bearings at all points; uniform interchangeability of parts; dense sound castings of great strength; all of these features mean savings for the user in time and money over long periods of service.

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THE LUNKENHEIMER CO.
—"QUALITY"—
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EXPORT DEPT. 318-322 HUDSON ST., NEW YORK

For full information on the complete line of Lunkenheimer Iron Body Gate Valves send for copy of Catalog 78.

Buy from your local Lunkenheimer distributor! He is cooperating in every way to give you the kind of service you so vitally need for the National Defense Program.

age roll begins under 175 lb. pressure per inch of roll length and rapidly increases under additional pressure; that toe blocks are generally not recommended; that, generally, the method of loading is not left to the discretion of the mills but is controlled by the purchaser; and that unloading from cars and handling in the press rooms are factors to be considered.

Mr. Fasold next suggested three alternate loading methods, listing them in what he believed to be their order of effectiveness, namely: loose load, key-roll method, and floating unit load. He also related that investigation does not bear out the general misapprehension among the trade as to the damage caused in classifying cars through hump yards; and that the question of overspeed impacts is receiving more attention today by Member Roads of the Association of American Railroads than any other one subject.

Steel Piping Film Shown at Engineers Group Meeting

The Plant and Power Engineers Group Meeting was presided over by Grover Keeth, Marathon Paper Mills Company, Rothschild, Wisconsin. Two outstanding features of the program of this meeting was a motion picture on "Fabrication of Carbon Molybdenum Steel Piping for All-Welded High-Pressure High-Temperature Steam Service" that was shown and explained by S. J. Horrell, Vice President, Blaw-Knox Company, Pittsburgh, Pa.; and a quiz program with M. Jacobs, C. T. Main, Inc., Boston, Mass., Claude A. Sorg, The Sorg Paper Company, Middletown, Ohio, and E. R. Comee, Pejepscot Paper Company, Brunswick, Me., as the experts to answer all questions.

Election of Officers

At the general conference, held during the afternoon of the third day of the convention, with Arthur B. C. Drew, President, presiding, reports of various committees were read and approved, and officers were elected by unanimous ballot for the ensuing year. These officers are: Oscar Stamets, President; Grover Keeth, First Vice President; S. C. Blankinship, Second Vice President; Ray L. Barton, Third Vice President; Niles Anderson, Fourth Vice President; and Homer Latimer, Fifth Vice President.

The general conference meeting was concluded with a most interesting demonstration and lecture by Dr. Phillips Thomas, Westinghouse Electric & Mfg. Company, East Pittsburgh, Pa. The theme of his presentation was "New Horizons of Science," and surely some of them were touched upon nontechnically and dramatically in a way to appeal to the most lay observer and listener.

Some More Merrymaking

A band concert during the late afternoon on the lawn of the Poland Spring House and a joint banquet during the evening brought the three-day session to a close.

The concert was given by the S. D. Warren Company Band, with S. A. Guimond directing.

The toastmaster of the evening was Walter S. Wyman, president, Maine Seaboard Paper Company, Augusta, Maine. Howard Pierce Davis, Columbia Broadcasting System, New York, was the principal speaker.

The address by Mr. Davis followed a number of pleasantries which included the presentation of an individual gift by Grover Keeth, on behalf of the association, to both Mrs. Arthur B. C. Drew, the wife of the retiring president, and to Mrs. Oscar Stamets, the wife of the newly-elected president; the presentation of prizes by Fred Boyce, first president of the association, to the winners of the ladies' golfing tournament; the presentation of the Past President's Jewel to Arthur B. C. Drew by Fred Boyce; some brief comments by Oscar Stamets in reference to his affiliation with the association and to his hopes for his term of office as president; the presentation of a gift to Mr. Stamets by James Fish of the Pennsylvania-New Jersey-Delaware Division on behalf of the division; the presentation of the L. D. Post Trophy, a Hamilton watch, to retiring president, Arthur B. C. Drew, by John J. O'Brien, co-publisher of *Paper Mill News;* and the singing of several numbers by the Warren Men's Singing Club—a musical treat to everyone.

Banquet Speaker Points to U. S. Opportunity

The address of Mr. Davis revealed world conditions as he sees them. He said that our descendants, when reading the history of our times, will read the tragic story of a century which began auspiciously but developed into one of the stormiest periods of all time. He added that the total picture of the world today is a marked spectacle, yet it is only a composite of many pictures previously observed.

What we need more than anything else at this minute, continued Mr. Davis, is perspective, and perspective presupposes the historical rather than the hysterical view of each new event. From Versailles to Munich, he related, there were four fatal steps which we should never forget—Italian seizure of Fiume, Polish seizure of Vilna from the Lithuanians, Japanese invasion of Manchuria and China, and the betrayal of Ethiopia by the League of Nations. World War No. 2, said Mr. Davis, was inevitable after the Ethiopian incident.

Mr. Davis cited five problems in the world today which he said would remain in the day of victory—Communism, Fascism, hysteria, want, and Democracy.

The United States, he said, has a unique opportunity for world leadership and, if we want a better world, we shall have to help make it.

Just Applause

One of the pleasant sidelights of the convention was the All-Wisconsin Breakfast given to invited guests by the Lambert Penhallows and the Wadhams Division of Socony-Vacuum Oil Company. This breakfast, a regular affair at the annual convention for several years past, was served from eight to eleven o'clock on the morning of June 19, the last day of the meetings. Mr. and Mrs. Penhallow cordially greeted each guest and most graciously made of the breakfast something most friendly and enjoyable.

Some word of praise also is due to the convention committees who planned and worked out the details of the entire convention for the enjoyment and profit of everyone who attended. The names of those who composed the various committees are given herewith, and the success of the meeting and the enjoyment of everyone who attended was the highest tribute to their efforts.

General Chairman.....A. B. C. Drew

Convention Manager..George W. Craigie

Men's Dinner—C. W. Stewart, W. E. Parsons.

Golf—J. H. Dow, W. H. Stroud, F. E. Rice, Roy Tewkbury, L. E. Weiser.

Outdoor Games—Frank Roberts, A. S. Hocker, Harry Wallace.

Music and Dance—Lawrence Parkman, William H. Cape.

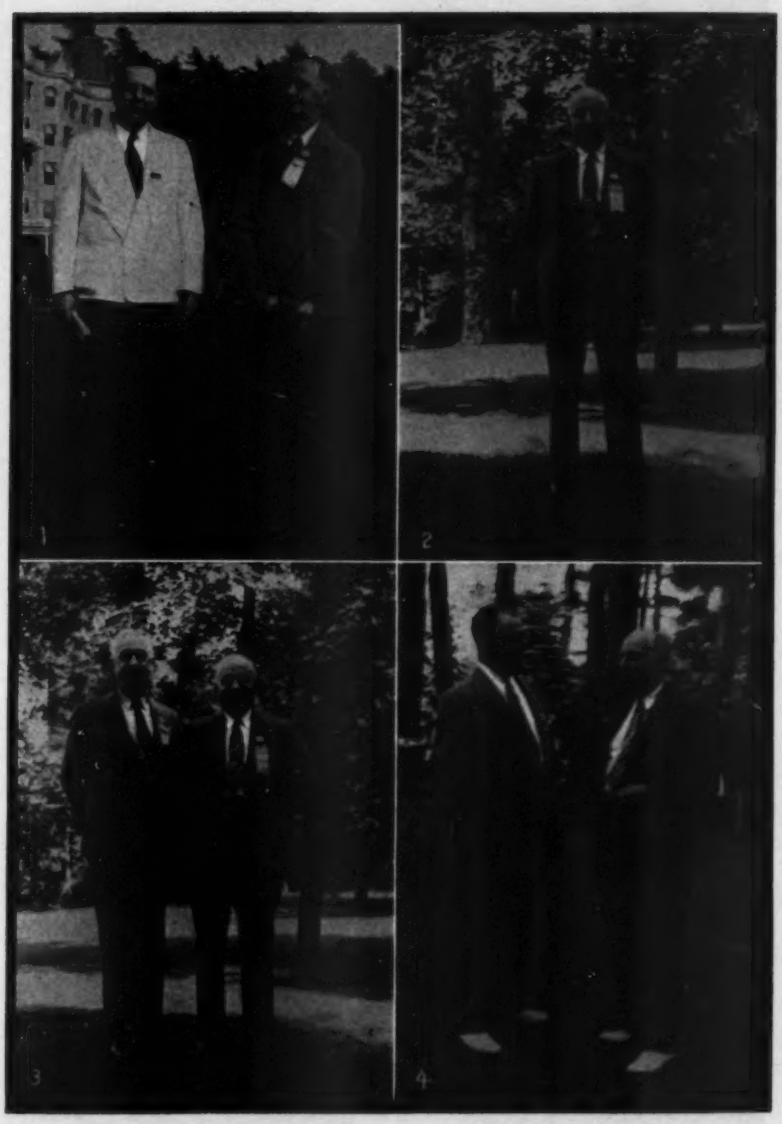
Ladies' Entertainment and Bridge—Mrs. Arthur B. C. Drew, Mrs. Aubrey Crabtree, Mrs. A. S. Hocker, Mrs. Maurice F. McCarthy, Mrs. C. W. Stewart, Mrs. K. E. Terry, Mrs. Harry Wallace, Mrs. Robert M. Wishart.

Hospitality Committee — Oscar Stamets, Grover Keeth, L. S. McCurdy, S. G. Blankinship, Raymond L. Barton.

The twenty-third annual meeting of the Superintendents Association will be another return engagement. Next year they meet in Grand Rapids, Michigan, where the 1936 annual meeting was held.

SUPERINTENDENTS *at Play*

Follow the arrow to see what the cameraman saw when he tried to follow some of the superintendents at the Poland Spring meeting. (All legends read from left to right.)



(1) At the start, the photographer met Kil. Terry (S D. Warren Co.) and A. B. C. Drew, president of the association.

(2) Oscar Stamets (Riegel Paper Corp.) didn't mind being surprised, and he let the photographer get a good one of him—he even put on a big smile.

(3) Before they could go on, "Bob" Eminger walked up, and this time the camera caught two smiling gentlemen with one shot.

(4) Gene Bechard (Eastwood-Nealley Corp.) was seen in conversation with Field Secretary George W. Craigie.

(5) G. A. Day and Mrs. Day (Brown Co.) took a few minutes off to relax.

(6) W. H. Hall and R. F. McNett (Bauer Brothers Co.) are "having a fine time, thank you."

(7) K. J. Mackenzie and Mrs. Mackenzie (Eastman Kodak Co.) are very obliging—of course, they like cameras.

(8) Glenn D. Baber, Jack Dabney, and Lawson Williams (Harris-Seybold-Potter Co.) take time to enjoy a smoke.

(9) Mrs. Betty Warren was Registrar of the convention, and what with keeping a list of all the delegates, and helping her father, (G. W. Craigie), she was a very busy lady.

(10) H. L. Thompson (Nashua River Paper Co.), Walter J. Sullivan (du Pont), Mrs. Sullivan, and Mrs. Clingan—anxious to be off.

(11) O. J. Mills (Sandy Hill Iron & Brass Works) seems to be on his way to meet someone.

(12) This time the cameraman saved some film—he got five with one shot. H. H. Harrison (Crystal Tissue Co.), T. E. Dial (Socony-Vacuum Oil Co.), Wm. Willets (Titanium Pigment Corp.), Harry E. Weston (Fritz Publications), and Burton L. Kassing (Hammermill Paper Co.).

(13) J. E. Power (U. S. Rubber Co.) takes it easy on the hotel veranda.

(14) All ready to start the game.

(15) A well satisfied foursome: Carl J. Schmidt (du Pont), Harry Deffew (Standard Paper Mfg. Co.), Ray Harter (R. T. Vanderbilt Co.), and Alan Griffin, (Riegel Paper Corp.).

(16) Wm. E. Green, coming in from the course, meets R. B. Stewart (K. V. P.).

(17) What are they going to do? They didn't say, but six good fellows don't meet without something in mind. "Here they are": S. V. Rogers (Container Corp. of America), Ollie W. Messner (Robertson Paper Box Co.), "Ned" E. J. Johnstone, (Lockport Felt Co.), F. T. Thornton and Roy Tewksbury (Stowe-Woodward, Inc.), and Clayton DeMers (Taylor Instr. Cos.).

(18) Wm. Alvin "Spike" Kelly (E. D. Jones & Sons Co.) was pretty well satisfied with that last shot.

(19) Game looked pretty good right at this point for G. W. Hardaker (Sinclair Co.), D. G. Gardner (Great Northern Paper Co.), and F. J. Cronin (Cheney Bigelow Wire Co.).

(20) The sun was in their eyes—but they didn't mind. R. M. Radsch (Appleton Machine Co.), Wm. Woodward and Bob Young (S. D. Warren Co.).

(21) "A great place to have a convention, don't you think? Roy Tewksbury (Stowe-Woodward Co.) remarked to Joe Thomas (Rohm and Haas) and R. Cameron Whitney (Morningstar, Nicol, Inc.), and they agreed 100 per cent.

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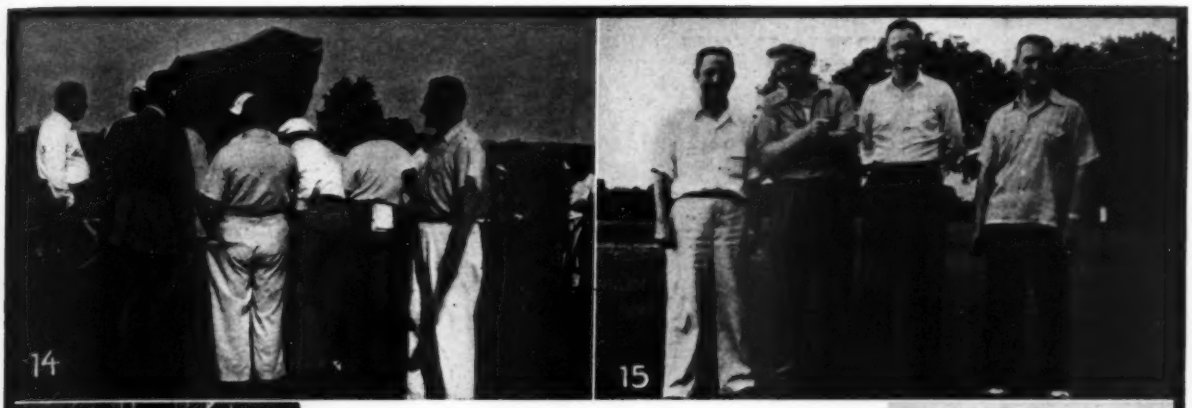
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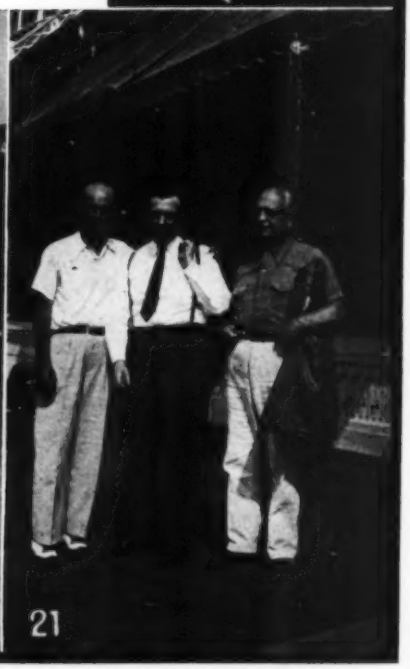
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EVERYBODY LIKES A PICNIC!

And if you think superintendents don't, just see what a grand time was had by all "in the grove" at Poland Spring

(22) Better stop here if you haven't had lunch, for this was some picnic, and even the pictures will work up an appetite. There was so much food at this picnic some of the delegates thought they would stock up for a long time. (23) There was plenty of room at the tables, but some tried this experiment— (24) exercise while you eat. Did it work? Don't really know. But here they are (25) and (26) ready for more, and from the looks of that table (27) there was plenty of food left.

Prefabricated BY EXPERTS
UNDER CONTROLLED CONDITIONS

MODERN piping systems place more and more emphasis on accurate piping fabrication that can comply with stringent specifications. At Pittsburgh Piping such accuracy begins in the engineering department where fabrication details are carefully planned and the layout is detailed for the most efficient method of shop fabrication.

Special jigs and positioning equipment permit the welders to work in a natural position. Modern facilities for machining, straightening and checking for dimensions insure fabrication to close tolerances. By pre-fabricating complex assemblies as large as shipping facilities and installation space will permit, insurance inspection (where required) and final erection are greatly simplified.

With time the vital element, faster and better pre-fabrication by Pittsburgh Piping experts is of decided advantage.

PITTSBURGH PIPING & EQUIPMENT CO.
10 FORTY-THIRD STREET **PITTSBURGH, PA.**

Woolworth Bldg., New York · Occidental Bldg., Indianapolis · Peoples Gas Bldg., Chicago · Union Guardian Bldg., Detroit
Public Sq. Bldg., Cleveland · 10 High St., Boston · Liberty Life Bldg., Charlotte · 525 Market St., San Francisco

Pittsburgh Piping

SUMMER MEETING OF THE CANADIAN TECHNICAL SECTION

▶▶▶ A VERY SUCCESSFUL meeting of the Technical Section, Canadian Pulp and Paper Association was held at the Seigniory Club, Montebello, Quebec, June 19th, 20th and 21st.

A new attendance record was established for summer meetings of the Technical Section, with 131 registrations being recorded. This total was made up of 94 members and 37 non-members.

The summer meeting was conducted in a similar manner to the 1940 meeting at Grand'Mere. No formal papers were read at any of the group meetings. These meetings, held under the auspices of each of the twelve standing committees, took the form of group discussions where the members attending informally discussed questions of vital interest to them in the various phases of the manufacture of all types of pulps and papers. A group discussion was also conducted by a new committee which has been set up to study the important question of smoothness-printability.

In addition to the above group discussions, the Pulp Evaluation Committee held an open-organizational meeting to discuss the problems of this important subject. This meeting was held Friday morning and was well attended, there being 24 in attendance. Each committee which had a quorum of its members present also held a closed committee meeting to discuss progress to date and to complete plans for their programme for the year.

A full representation of the Technical Section Council was present at the meeting and a council meeting was held on Friday morning. W. B. Scott of Consolidated Paper Corporation Limited, Laurentide Division, was the officer in charge and the others of the Council present were Messrs. E. D. Hyndman, Anglo-Canadian Pulp and Paper Mills; H. D. Hyman, J. R. Booth Limited; W. T. Bennett, Canadian International Paper Company, Gatineau; W. A. Ketchen, Fraser Companies Limited; C. A. Sankey, Ontario Paper Company Limited; H. S. Spencer, Howard Smith Paper Mills Limited; and Douglas Jones, the secretary-engineer of the Technical section. A. E. Cadman, the secretary-manager of the Canadian Pulp and Paper Association was also in attendance.

The Technical Section dinner was held on the evening of June 19. W. B. Scott, chairman of the Section, was the toastmaster. After dinner Mr. Scott, in a few well chosen remarks stressed the fact that, although Canada was at war, it was considered necessary that the Section hold its summer meeting, so that members could be afforded the opportunity to meet and discuss problems pertinent to the Industry. In this informal manner at the round table discussions, members could discuss problems and aid one another in solving them. The chairman then introduced the speaker, Royal S. Kellogg, secretary of the Newsprint Bureau, New York, who addressed the members on "The Newspaper of the Future." Mr. Kellogg presented a picture of his ideas as to the make-up and form that the newspaper might be expected to take, and pointed out the factors that will have important bearing on future developments. Mr. Kellogg was thanked by E. D. Hyndman, vice chairman of the Section. F. G. Robinson, president of the Canadian Pulp and Paper Association, greeted the members on behalf of the association and presented a picture of the functions of the association and the industry, with particular regard to war work. In this connection he thanked the members of the Technical Section who were voluntarily giving so much of their time and effort in helping the cause. George McKee, a past president of the Canadian Pulp and Paper Association, also greeted the members and wished them success in their deliberations.

On Saturday morning, June 21, some forty members played golf at the Seigniory Club course for the R. A. McInnis trophy, emblematic of the Technical Section championship. The trophy was won by J. F. Lawrence of the Consolidated Paper Corporation Limited, Belgo Division, who posted a low net of 68. A. E. Cadman presented the trophy to Mr. Lawrence at the conclusion of play.

◆

MAINE-N. H. TAPPI TO MEET IN ORONO

Following the very successful meeting of the proposed Maine-New Hampshire Section of the Technical Association of the Pulp and Paper Industry held last fall, another meeting is being arranged to be held at Orono, Maine on September 26-27, 1941.

This meeting will feature the formal opening of the new chemical engineering building of the University of Maine. The Maine Section of the American Chemical Society and all graduates of the University of Maine in chemistry and chemical engineering will be invited to attend. A number of outstanding men from the chemical engineering profession and the pulp and paper industry have been invited as speakers.

Besides the general session, there will be group meetings on Friday and Saturday, a banquet on Friday evening, and a luncheon on Saturday. This will be followed by the Maine-Rhode Island football game in the afternoon.

Reservations should be made early at either the Bangor House, Orono, or the Penobscot Exchange Hotel in Bangor, Maine, since a very large attendance is expected.

◆

"BACK-TO-COLLEGE" TAPPI MEETING TO BE DIFFERENT

The fall meeting of the Technical Association of the Pulp and Paper Industry, September 16 to 19, 1941, will be something different—a "back-to-college" type of meeting with housing in the beautiful University of Michigan Union and Quadrangle, Ann Arbor, Michigan, where all of the general and men's sessions will take place. Special facilities will be placed at the disposal of the women for their meetings in the Women's League Building.

First details of the program have just been announced by General Chairman, Ralph Hayward. The forenoons will be taken up with general sessions, at which time subjects pertinent to our industrial economy under the Defense Program will be discussed. First releases indicate such titles as The Paper Industry in the National Emergency, Paper Prices, International Economy, Employee Relations, and Industrial Research will be covered in these morning sessions. After the morning sessions, the body will separate into technical groups for afternoon sessions. A number of group luncheons will provide an opportunity for the discussion of practical mill operating problems such as coating, surface sizing, pigments, bleaching, engineering, papermaking, etc. There will be one general noon session where papers will be read on such titles as Personality and Sales, and Keeping Your Balance, for those who prefer to discuss less technical subjects.

Of course, there will be a full schedule of entertainment and sports events. The complete facilities of the University will provide that. Full advantage will be taken of the wonderful sport facilities of the University such as golf, skeet shooting, tennis, riding, swimming. There will also be an opportunity to watch the University of Michigan football team in practice.

On Friday, the 19th, the convention will move to Detroit for a trip through

B. F. PERKINS & SON, Inc.
ENGINEERS AND MANUFACTURERS
HOLYOKE, MASS.

THE LARGEST MANUFACTURERS OF ROLLS IN THE WORLD

This paper plant was using a skid and truck system for handling paper flats. It was entirely satisfactory until the plant's business jumped. Then limitations in stack heights forced overcrowding of floor space; made it increasingly difficult to quickly make up rush orders. Extension of the storage bay was contemplated.

Reading suggested the illustrated monorail and electric hoist installation, to take advantage of the *free* space above the stacks. Skids were still fully utilized for short hauls and temporary storage. Long hauls to loading platforms were handled by the hoists. Plans for new building were abandoned, faster handling assured.

Write Reading for time and money-saving overhead handling *ideas*. The equipment is tops, too.

READING CHAIN & BLOCK CORP.
DEPT. 44 READING, PA.

READING
Chain Hoists, Electric Hoists, Cranes and Monorails

the Ford plant, with luncheon at Dearborn Inn, and a visit to Greenfield Village.

Reservations are already being made. These requests should be made with Charles A. Fisher of the Department of University Extension, University of Michigan, Ann Arbor, Michigan. Rates for rooms are: single, $1.75; double, $2.50.

◆

▸▸▸ AT THE ANNUAL CONVENTION of the National Paper Box Manufacturers Association, held last month in Atlantic City, C. W. Reiber of the Columbus Paper Box Company, Columbus, Ohio, was elected president. Walter P. Miller, Jr., of the Walter P. Miller Company, Inc., Philadelphia, was elected vice president and Walter H. Deisroth of the Deisroth Company, Inc., Philadelphia, was elected treasurer.

◆

PACIFIC EXPOSITION DRAWS ATTENDANCE

The Pacific Heating and Air Conditioning Exposition, sponsored by the American Society of Heating and Ventilating Engineers, closed one of the most colorful and well attended expositions ever held in San Francisco on June 20.

The expositions sponsored by this organization, and planned by Charles F. Roth, exposition manager, always draw an appreciative audience from every section of the United States. In addition, this year, practically all of the western states were well represented. Contributing to the attendance was the fact that both the American Society of Heating and Ventilating Engineers and the Heating, Piping and Air Conditioning Contractors National Association held conventions in San Francisco simultaneously with the exposition.

The national movement toward home building increased the interest and value of the exposition, and it seemed the displays of heating and air conditioning units and equipment drew the attention of all groups—professional and otherwise.

◆

DISPLAY SPACE IN DEMAND FOR CHEMICAL EXPOS.

Keen interest is being shown in plans for the 18th Exposition of Chemical Industries, which will be held December 1 to 6 in Grand Central Palace, New York. Ninety-five per cent of the available display space already has been engaged, which fact proves that the exhibitors realize the seriousness of the present strain on industry and are willing to co-operate to the fullest extent to maintain an output which will equal the demand.

The theme of the exhibit will be the "open hand policy," meaning an unselfish exchange of ideas and opinions, with the view in mind to improve products, increase yield, and establish efficiency in all departments.

◆

CONVENTIONS AND COMING EVENTS

June 17-19—American Pulp and Paper Mill Superintendents Association, Poland Spring House, Poland Spring, Maine.

June 23-27 — Forty-fifth annual meeting American Society for Testing Materials, at the Palmer House, Chicago.

Sept. 15-17—Fall Convention of National Paper Trade Association, Chicago.

Sept. 16-20—Fall meeting of the Technical Association of the Pulp and Paper Industry, University of Michigan, Ann Arbor, Mich.

Sept. 17-19—Annual Conference of National Industrial Advertisers Association, Royal York Hotel, Toronto.

Sept. 26-27—Maine-New Hampshire Section of TAPPI, Orono, Maine.

Oct. 6-10—Thirtieth Annual Safety Congress of the National Safety Council, Stevens Hotel, Chicago.

Oct. 6-11—Chicago Exposition of Power & Mechanical Engineering, International Amphitheatre, Chicago.

Oct. 11-14—National Association of Waste Material Dealers, Inc., San Francisco, Calif.

Dec. 1-6—Eighteenth Exposition of Chemical Industries, Grand Central Palace, New York.

Jan. 26-30, 1942—Seventh International Heating and Ventilating Exposition, in the Commercial Museum, Philadelphia.

STATED MEETINGS

Technical Association of the Pulp and Paper Industry.

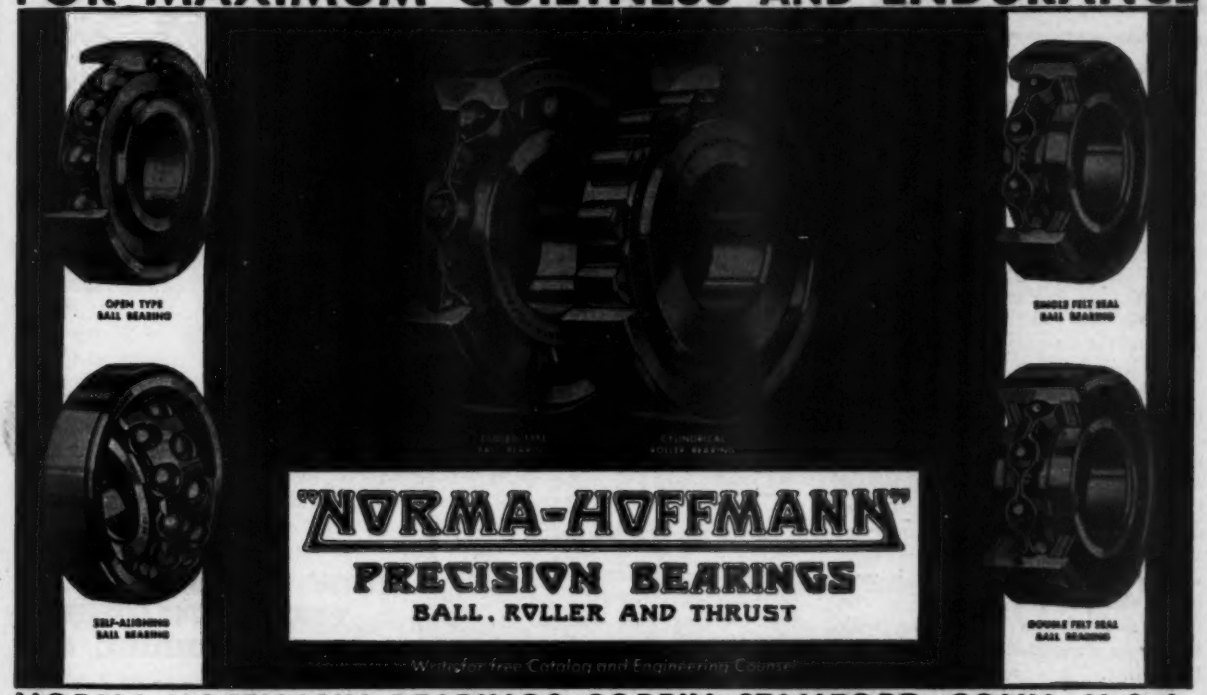
Delaware Valley Section—1st Friday of each month—Engineers' Club, Philadelphia, Pa.

Kalamazoo Valley Section — 1st Thursday of each month—Park American Hotel, Kalamazoo, Mich.

Lake States Section—2nd Tuesday of each month—Conway Hotel, Appleton, Wis.

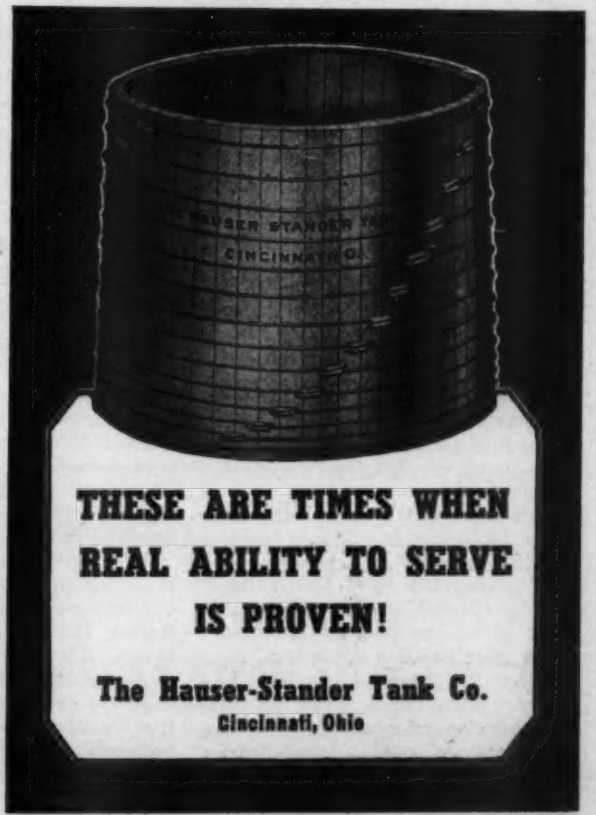
New England Section—3rd Friday of each month—Roger Smith Hotel, Holyoke, Mass.

FOR MAXIMUM QUIETNESS AND ENDURANCE



NORMA-HOFFMANN BEARINGS CORP'N, STAMFORD, CONN., U. S. A.

S.W.W.
BEATER TACKLE
● If you feel a special bed plate or beater bar will solve a beating problem, ask our engineers for their assistance. They know beater tackle—can help you choose a special or standard design from the complete SWW line.
SIMONDS WORDEN WHITE CO.
DAYTON, OHIO


HAUSER STANDER
CINCINNATI O.
THESE ARE TIMES WHEN REAL ABILITY TO SERVE IS PROVEN!
The Hauser-Stander Tank Co.
Cincinnati, Ohio

ALLIED

SYNTHETIC RESIN BUS. ACQUIRED BY HERCULES POWDER

On July 1, Hercules Powder Company acquired the synthetic resin business of John D. Lewis, Inc., Providence, Rhode Island. This transaction covers the land, buildings, equipment, and processes of the Lewis synthetic resin plant at Mansfield, Massachusetts, and the entire plant at Brunswick, Georgia. The Lewis company will continue the production of textile and heavy chemicals at the Mansfield plant.

John B. Lewis, president and treasurer of John D. Lewis, Inc., will act as consultant for Hercules Powder Company during the time required for consolidation, making his headquarters at Providence, Rhode Island. Howard Bates, vice president of the Lewis company, will join the sales staff of the Hercules Synthetics Department, with temporary headquarters at the Mansfield plant.

The Mansfield plant will be operated under the direction of R. F. Schlaanstine, director of operations of the Synthetics Department. Dr. R. Marx, technical director of the Mansfield plant, will continue in this capacity. The Lewis plant at Brunswick, Georgia, will be operated by the Hercules Naval Stores Department for the Synthetics Department.

◆

▶▶▶ A PERMIT ALLOWING $275,000 additional construction to the Allis-Chalmers shops was recently granted by the city of West Allis. Siesel Construction Company has started work on the buildings, which will be 145x272 feet and two stories high.

◆

COLONEL TOWNSEND MEMORIAL UNVEILED

In memory of the late Colonel Arthur Farragut Townsend, one of the founders of the Manhattan Rubber Manufacturing Company, and chairman of the board of Raybestos-Manhattan, Incorporated, a 55-foot bronze flagstaff, surmounting a granite pedestal, ornamented by a bronze bas-relief of Colonel Townsend, was unveiled at services held on the lawn of the office building of the company on May 10.

Contributions from 3,600 factory and office employees made the erection of this memorial possible. Julio Kilenyi, the noted sculptor, was engaged to design and make the relief of Colonel Townsend. The impressive dedication services were attended by the Colonel's widow and son, officers and directors of the company, and most of the 3,600 employees.

◆

W. J. O'BRIEN CO. OFFERS NEW PAPER DRYING SERVICE

The W. J. O'Brien Company and Associated Engineers, Syracuse, New York, successor to the Farnsworth Division of the Bagley & Sewall Company, Watertown, New York, has announced a new, specialized service for improving and modernizing paper drying systems.

This service does not confine itself to a regular standard arrangement for handling drainage of condensation from drying cylinders only, but rather provides for complete survey and the measurement and control of every phase of water removal from the wet end to the winder.

◆

▶▶▶ THE MANUFACTURING PLANT and offices of Greene, Tweed & Company have been moved to the Palmetto Building at Bronx Boulevard and 238th Street, near Woodlawn in New York City. The plant is adjacent to the New York Central and New Haven Railroads, thereby providing convenient shipping accommodations. New and modern machinery has been installed for manufacturing processes, and to provide for the additional lines of packings and other new products which have been developed.

◆

MANHATTAN RUBBER GETS ADV. AWARD

The Manhattan Rubber Manufacturing Division of Raybestos-Manhattan, Incorporated, Passaic, New Jersey, received the annual award of the National Advertising Agency Network for "The Best Advertising Campaign in Business Papers" at a recent convention held in Chicago.

There were 151 campaigns entered in this classification by the 25 member advertising agencies. The Manhattan Rubber Division was entered by its agency, The Roland G. E. Ullman Organization of Philadelphia.

It was the decision of the judges that the Manhattan campaign was an unusually comprehensive one, using 58 industrial and business magazines, and featuring the extensive and diversified lines of mechanical rubber goods, asbestos friction material, abrasive wheels, and bowling balls, made in Passaic. Supplementing this, direct mail, catalogues, and other forms of advertising and sales promotion were used.

This company was previously awarded national honors when its campaign was rated as second in the field by the National Industrial Advertisers Association in 1937. James J. DeMario is the company's advertising manager.

◆

▶▶▶ A NEW HARRIS KODACHROME MOVIE has just been placed on the market by Harris-Seybold-Potter Company, Cleveland, Ohio. The film describes the offset processes and should be both interesting and instructive to graphic clubs, advertising clubs, and schools. It consists of about 1200 feet of 16-mm. silent, and the time required to show it is about 45 minutes.

◆

NEW INDUSTRIAL TIRE DEVELOPED BY GOODRICH CO.

A new tire, made with a special rubber compound that is said to have a million times the electrical conductivity of ordinary rubber, was recently put on the market by B. F. Goodrich Company, Akron, Ohio. This new development will result in reducing to a minimum the fire and explosion hazard caused by static electricity.

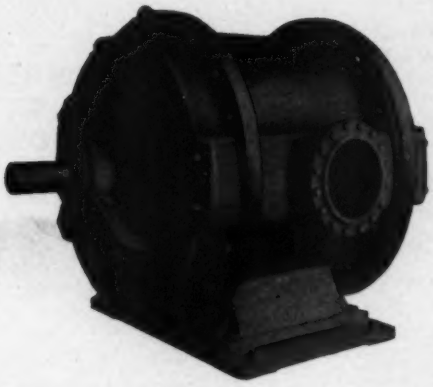
This product will prevent the accumulation of any charge of static electricity strong enough to produce a spark when the vehicle makes a contact. Tests, carried on by the company, prove that where trucks or tractors are operating on a solid base floor, these tires will throw off static electricity, so that a balance of electricity between the floor and the vehicle is set up.

Particular application for these tires will be found in manufacturing plants working on defense orders where products such as gunpowder, explosives, and other inflammable materials are being manufactured. This new development marks another step forward in the ever important problem of industrial safety.

◆

▶▶▶ CELEBRATING THE TENTH ANNIVERSARY and ten years of continuous expansion, the D. W. Haering & Company, Inc., in Chicago, announce that the sales for the first half of 1941 have exceeded the total annual sales of 1940. In order to accommodate the increased staff the company transferred the general offices to the 18th floor of

ONLY NASH VACUUM PUMPS HAVE ALL THESE FEATURES



One Moving Element. Non-pulsating Vacuum. No Internal Wearing Parts. No Internal Lubrication. Handles Liquid With Air. No Expert Attendance. Constant Efficiency. Low Maintenance Cost.

NASH ENGINEERING COMPANY
SOUTH NORWALK, CONNECTICUT, U. S. A.

papermakers attention!

Six publications that you can really use!

Technology of Papermaking Fibers	$ .50
Pulp Bleaching	.50
Spots and Specks in Paper — Murray M. Rubin and Milton L. Rubin	.50
Lessons in Paper Making—Part 1 — Harry Williamson	.50
Lessons in Paper Making—Part 2 — Harry Williamson	.50
Drying of Paper on the Machine — B. M. Baxter	1.00

NOW AVAILABLE POSTPAID FROM

FRITZ PUBLICATIONS, INC.

59 E. VAN BUREN ST. - - CHICAGO, ILL.

Your...

PAPER DRYING SYSTEM PROGRESSIVELY IMPROVED

• *Engineered from* "WET END TO WINDER"

Diagnosed — Prescribed
Practical Improvement
Program Designed

•

THE W. J. O'BRIEN CO. & Associated Engineers
205 HARRISON ST. • Syracuse, N. Y.

To Owners

FARNSWORTH EQUIPMENT

Repairs are Available

•

Farnsworth Steam Separators

With Multiple Baffles and Deep Water Seal . . . Can be Converted to O'BRIEN CENTRIFIX Steam Purifier—Guaranteed Efficiency not over 2/10 of 1% Moisture (A.S.M.E.) Test. Exhaust Steam Purifiers—Not More Than 9 Parts Total Solids per Million.

•

Farnsworth Condensation Pumping Units Tilt and Stationary Types...

(Intermittent Drain and Discharge, Large Slugs) can be Replaced by

O'BRIEN
Condensation Receiver Pumping Units

Motor Driven—Steam Turbine Driven or Steam Displacement Non-Tilt Types

•

Farnsworth Multiple Jet Steam Water Heater...

Can be Replaced by

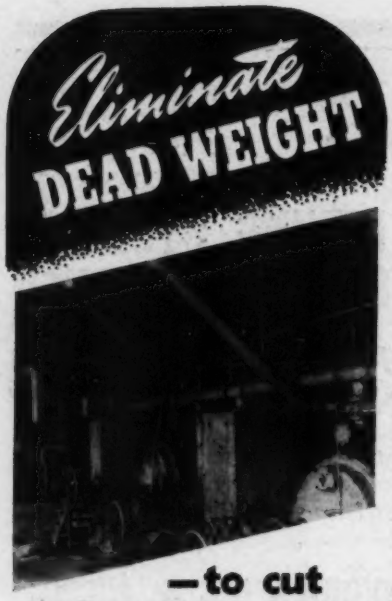
O'BRIEN
Steam Water Mixer

For High or Low Pressure Steam

•

O'BRIEN STEAM SPECIALTY CO.

205 Harrison St. • Syracuse, N. Y.
Established as Specialists Since 1920



—to cut your pipe costs

IN pipe, as in almost everything else, weight that doesn't contribute to strength is worse than useless—it's dead weight, and a burden.

Compared with Taylor Spiral Pipe conventional wrought pipe is loaded with dead weight. Taylor Spiral Pipe is light wall pipe, yet its reinforcing seam adds an extra measure of strength that will withstand bursting, collapsing and other stresses as well as wrought pipe of much greater weight.

Eliminating dead weight makes Taylor Spiral Pipe much easier to handle and less expensive to ship—cuts installed cost almost in half.

• Available in a complete range of sizes, lengths and gauges—with joints and special coatings for all services. Taylor Special Fabricating Service can solve your most intricate piping layout.

TAYLOR FORGE & PIPE WORKS

General Offices & Works:
Chicago, P. O. Box 485
New York Office: 50 Church St.
Philadelphia Office:
Broad Street Station Bldg.

WRITE FOR CATALOG 404

TAYLOR *Spiral* PIPE

the Engineering Building at 205 Wacker Drive in Chicago on July 1. The main plant at 2308 South Winchester Avenue in Chicago will be devoted to providing improved facilities for handling the company's growing customer laboratory service and for conducting further research into water and corrosion problems.

◆

▶▶▶ THE USE OF WELDING in repairing production equipment is an important aid to the National Defense Program, it was pointed out recently by the James F. Lincoln Arc Welding Foundation, Cleveland, Ohio. According to the Foundation, salvage by welding not only permits speedy repair of worn or broken machinery, thus minimizing outage time, but the method is extremely economical, costing a small percentage of replacement.

◆

▶▶▶ THE UNION OIL COMPANY'S new wax plant, located on San Francisco Bay at Oleum, California, went into production July 1, to manufacture waxes having melting-point ranges of 145/150 deg. Fahr.—AMP, and 160/165 deg. Fahr.—AMP. These products which have been used primarily as waterproofing agents for paper containers, wrappings, and cardboard cartons, are also used extensively in connection with the manufacture of electrical equipment, rubber products, printing inks, shoe polish, candles, and certain types of varnish.

◆

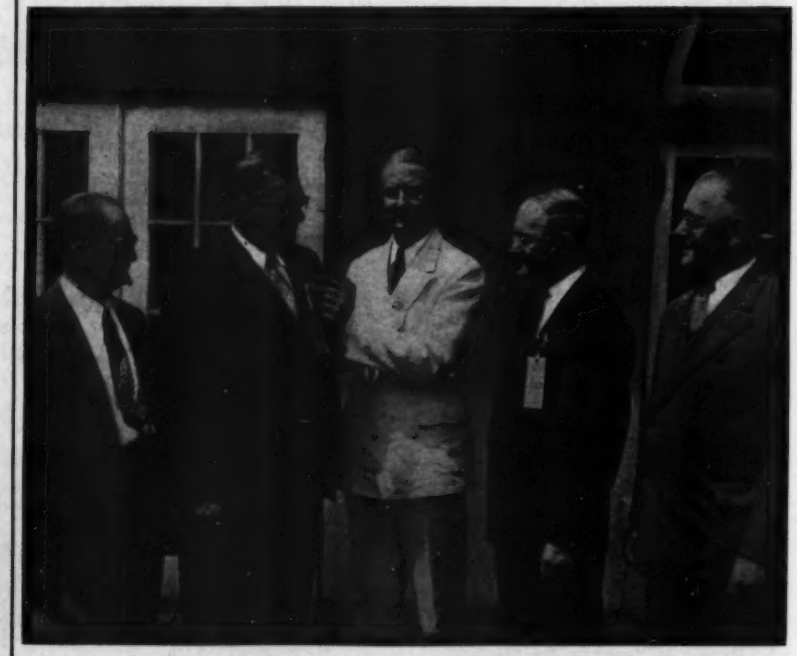
NIAGARA ALKALI & ELEC. B. GAS NOW ONE CO.

Two well-known affiliated companies—Niagara Alkali Company and Electro Bleaching Gas Company, Niagara Falls, New York—have joined forces as of July 1, and will operate as one organization. The new company will be known as Niagara Alkali Company.

There will be no change either in the policies of the company or its personnel, but it is felt that this change will facilitate operation of the companies and increase the efficiency of the service.

◆

▶▶▶ THE INDUSTRIAL PRODUCTS COMPANY, Philadelphia, Pennsylvania, announces that its offices, formerly located at 800 W. Somerset Street, have been moved to 2820 N. Fourth Street in Philadelphia.



Goodrich President Awards Service Pins

Long service with The B. F. Goodrich Company, tire and rubber manufacturers is represented here. John L. Collyer, company president, (center) is pinning a 40-year service pin on A. F. Schober, truck and bus tire representative in the New York district while C. L. Wessbecker, (extreme left), mechanical goods salesman in the New York district, who also received a 40-year pin; M. C. Leitch (right center) New York Mechanical division staff who got a 30-year service pin, and Al Hupfer, president of the company's Twenty Year Service club look on. ● Presentation of these emblems was made by Mr. Collyer at the semi-annual pin presentation of the Twenty Year club in Akron, Ohio. Seven employees received 40-year emblems, 37 got 30 year pins and 76 received 20-year pins. There are now more than 3000 active employees with more than 20 years of service on the company's payrolls.

WOODBERRY 887 Reinforced Dryer Felts have been setting records throughout every branch of the paper making industry. Two felts in '38, twenty felts in '39, forty-three more since, is the actual record of purchases of just one paper manufacturer who reports savings of 25% in dryer felt costs per ton of paper made. A patented construction, with asbestos yarns woven into the face of WOODBERRY 887's, gives them a much longer life. Specify WOODBERRY 887's if you would insure top quality of papers with maximum dryer felt economies.

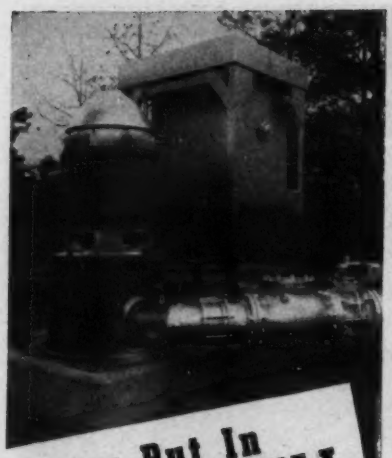
MT. VERNON WOODBERRY MILLS, INC.

TURNER HALSEY COMPANY

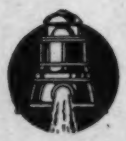
Selling Agents

40 WORTH STREET ★ NEW YORK, N. Y.

CHICAGO · NEW ORLEANS · ATLANTA · BALTIMORE · BOSTON · LOS ANGELES · SAN FRANCISCO



Better Put In Your Own WELL WATER SUPPLY



A NATIONAL emergency exists! You have been called upon to "keep your wheels turning"—and production at its peak. A water shortage, or failure would play havoc with your program. Save time, worry and possible shut down by putting in your own Well Water System.

Select the most dependable system made. That means Layne. Select it for its proven reputation of highest efficiency, unquestionable quality and outstanding engineering features. Select a Layne Well Water System because the Layne organization has the men, equipment and skill to do the job complete and right, in the shortest possible time—anywhere in the United States or possessions.

Layne Engineers will cooperate gladly in making a survey of your water supply needs. They are qualified specialists in Well Water Supply problems, and will collaborate with you, your engineer or plant superintendent. There is no obligation.

"For Defense" is a new bulletin just issued which pictures and lists defense work completed for air fields, army camps, munition plants, etc., by Layne. It is free. Address

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Memphis, Tenn.

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PUMPS & WELL WATER SYSTEMS

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Layne-Arkansas Co.	Stuttgart, Ark.
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Layne-Central Co.	Memphis, Tenn.
Layne-Northern Co.	Mishawaka, Ind.
Layne-Louisiana Co.	Lake Charles, La.
Layne-New York Co.	New York City.
Layne-Northwest Co.	Milwaukee, Wis.
Layne-Ohio Co.	Columbus, Ohio.
Layne-Texas Co.	Houston, Texas.
Layne-Western Co.	Kansas City, Mo.
Layne-Western Co. of Minnesota	Minneapolis, Minn.
Layne-Bowler New England Corp.	Boston, Mass.
International Water Supply	London, Ontario, Can.

SAFETY

ACCIDENT RATES IN PAMPHLET FORM

The 1940 Accident Rates in the Paper and Pulp Industry are now available in pamphlet form from the National Safety Council.

These rates are based on the records of 246 plants employing 108,132 people who worked 230,583,000 hours during the year. This is the largest coverage ever reported to the National Safety Council.

Paper and pulp mills averaged 15.38 for frequency, or 23 per cent above the average for all industries. Severity rates averaged 1.64, or 14 per cent higher than the all-industries rate.

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▶▶▶ THE 1942 CALENDAR that is published annually by the National Safety Council, Chicago, in an effort to popularize safety in various walks of life has just been issued. Each of the 12 pages has a large colored illustration of one way to practice safety. Just under the illustration is an open space, in which a company ordering 200 or more calendars may have the company name printed at no extra charge. Many safety hints and hazards are explained on the back side of each page. In addition to its educational value, each of the posters is a work of art.

◆

FIRES CAUSE HEAVY DAMAGE IN CANADA

A number of men were charged under forest protection legislation and found guilty as a result of investigations into the causes of fires in Ontario and Quebec. Bush fires had continued unabated during May and for the first two weeks in June, causing considerable damage to thousands of square miles of some of the finest timberlands in the Province of Quebec, in the Lake St. John district, and completely destroying hundreds of square miles of pulpwood stands.

Towards the end of the month there was a serious outbreak in the vicinity of Baie Comeau, on the north shore of the Lower St. Lawrence, dangerously close to the newsprint mill of the Quebec North Shore Paper Company, owned by the *Chicago Tribune*. Timely rain, however, helped to bring the fire under control.

The Paper Industry Safety Scores

July 1, 1940 to June 30, 1941

Out of 161 mills reporting for May, 11 have perfect record

PERFECT SCORES
Division I—Pulp and Paper Mills

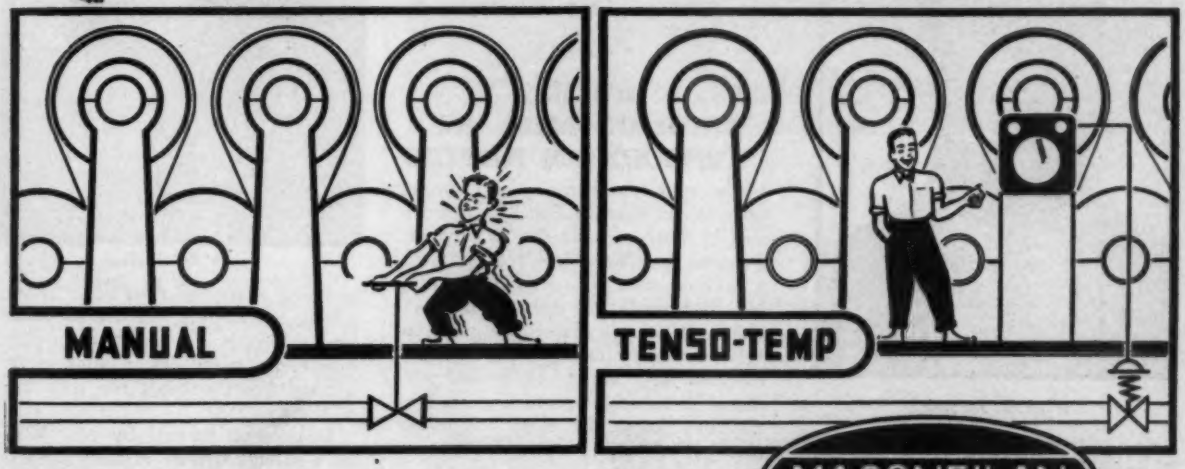
PARTICIPANT	MILL	LOCATION
GROUP A		
GROUP B		
GROUP C		
Price Brothers & Co., Ltd.	Jonquiere, P. Q.	Canada
GROUP D		
The Mead Corporation	The Harriman Co.	Harriman, Tenn.
Bird and Son, Inc.	Phillipsdale	Rhode Island
United States Gypsum Co.	North Kansas City	Missouri
Spaulding Fibre Co., Inc.	Milton	New Hampshire
The Mead Corporation	Nashville	Tennessee
Central Fibre Products Co.	Vincennes	Indiana
Spaulding Fibre Co., Inc.	Hayes	New Hampshire
Division II—Paper and Board Re-Manufacturing		
Bird and Son, Inc.	Chicago	Illinois
Bird and Son, Inc.	Shreveport	Louisiana
*Bay West Paper Co.	Green Bay	Wisconsin

*May report missing. Covers 10 months only.

SUMMARY OF CONTEST EXPERIENCE

Division	Man-Hours Worked	Reportable Injuries	Frequency Rate 1940-41 (11 mos.)	Comparison of Rates with 11 mos. of 1940
All Divisions	166,713,192	2,300	13.80	−3%
Paper & Pulp	150,539,193	2,100	12.96	−2%
Group A	101,288,229	1,236	12.10	+1%
Group B	25,304,228	355	14.03	−9%
Group C	15,991,663	348	21.76	−8%
Group D	7,955,074	171	21.50	−2%
Paper & Board Re-Manufacturing	16,173,999	200	12.37	+3%

You wouldn't do it this way... but are you doing it this way?



You wouldn't cling to the old-fashioned, unreliable, laborious and uneconomical method of manually controlling dryer temperature — but are you getting all the benefits of modern moisture-content control, offered by Tenso-Temp? Check your present control against these advantages offered by Tenso-Temp:

SENSITIVE to the slightest variations in moisture content; precisely adjustable to maintain any desired moisture up to the maximum the sheet will carry.

ECONOMICAL because first cost is moderate and maintenance as well as operating costs are minimum.

ACCURATE because moisture content indication is averaged for the full width of the sheet; response is instantaneous; variations in weight across the sheet do not produce false indication and inaccurate control.

If you are not getting all these advantages it will pay you to investigate Tenso-Temp — the Modern Moisture Content Control. Write for Bulletins.

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Pittsburgh San Francisco St. Louis
Toledo Tulsa
Mason Regulator Co. of Canada, Ltd., Montreal

NAMES *in the* NEWS

Personals

M. E. CODY RESIGNS —NICHOLSON IS NEW MANAGER

An important personnel change became effective July 1 when M. E. Cody, formerly resident manager of the Union Bag and Paper Corporation, Savannah, Georgia, was succeeded by G. W. E. Nicholson.

For several years, Mr. Nicholson was in charge of the Panama City, Florida, and Georgetown, South Carolina, mills of the Southern Kraft Corporation. He terminated this connection in May of this year. His experience in the industry covers a period of about thirty years.

G. W. E. Nicholson

Mr. Cody succeeded James H. Allen as Savannah resident manager of Union Bag and Paper Corporation in 1939, and was named a director of the company in March, 1940. He is reported on a vacation at present and no announcement has been made as to his future plans.

◆

▶▶▶ At a recent meeting of the board of directors of the Northwest Paper Company, Cloquet, Minnesota, *Frank A. Kelly* was elected vice president in charge of land and timber. Mr. Kelly took over the duties of the new office on May 14.

◆

Frank A. Kelly ——→

▶▶▶ At a recent meeting of the Board of Directors, *E. S. Bissell* was made vice president of the Mixing Equipment Company, Inc., Rochester, New York. Prior to his present promotion, Mr. Bissell was technical sales manager. He joined the company in 1937, and within a few months was appointed director of research, with responsibilities of development and market study.

◆

▶▶▶ *Aaron C. Bagg*, former president of the Parsons Paper Company, Holyoke, Massachusetts, recently resigned because of impaired health. *John L. Bagg*, a brother, succeeds him. Previous to his recent appointment, John Bagg was head of the Millers Falls Paper Company as well as general manager of the Parsons concern. Other changes in the personnel are: *Henry B. Burgee* as general manager, and *Edward P. Bagg III*, assistant to Mr. Burgee.

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JAS. A. RUSH MGR. OF MILL AT WISCONSIN RAPIDS

The new manager of the Consolidated Water Power & Paper Company's mill in Wisconsin Rapids, Wisconsin, is James A. Rush. He succeeds Harry J. Adrian, who passed away recently. Mr. Rush joined the company in 1933 at the Wisconsin Rapids branch. In July he was promoted to beater room foreman, and during 1936 was promoted to superintendent. During Mr. Adrian's illness, Mr. Rush was acting manager of the company.

WALLENE APPOINTED CHIEF ENGINEER OF JOHNSTON-JENNINGS

The Johnston & Jennings Company, Cleveland, announce the appointment of Frank O. Wallene as chief engineer of the company's Stowe Stoker Division.

Mr. Wallene served as utilities director for the city of Cleveland from 1936 to 1940. Prior to that time he had been active for many years in consulting engineering practice in Cleveland, specializing in power plant equipment, plant design, and in designing steam engines for ship propulsion.

Frank O. Wallene

Equipment covered by Mr. Wallene's patents will be manufactured by The Johnston & Jennings Company. Among these is an automatic control between purchased power and isolated plant power where steam is needed for processing and heating requirements.

Mr. Wallene is a member of the American Society of Mechanical Engineers and the Cleveland Engineering Society.

◆

▶▶▶ *R. U. Temple* recently became associated with Downingtown Manufacturing Company, Downingtown, Pennsylvania, as sales engineer. Formerly, Mr. Temple was employed as mill superintendent of the Ruberoid Company, Gloucester City, New Jersey. The duties of the new position will consist, mainly, of calling on the felt mills and others, supplying material to the building trades.

▶▶▶ The chief engineer of the Anglo-Canadian Pulp and Paper mills in Quebec City, *J. O'Halloran,* has been loaned to the War Time Merchant Shipping Ltd., which was set up to take charge of the huge cargo shipbuilding program now in progress throughout Canada. Mr. O'Halloran's offices are in Vancouver, British Columbia, where he will act as representative of the organization.

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▶▶▶ *George C. Schmid,* chemist of the Michigan Paper Company, Plainwell, Michigan, has resigned to become technical director of the Falulah Paper Company, Fitchburg, Massachusetts, assuming his duties July 1. Mr. Schmid has been employed at the Plainwell mill for about five years.

◆

JOHN RHAMSTINE ELECTED PRES. OF HUMMEL & DOWNING

John R. Rhamstine, of the Corn Products Refining Company, New York, was recently elected president of the Hummel & Downing Company, Milwaukee, Wisconsin. Mr. Rhamstine succeeds Arthur Ratcliff, who became chairman of the board.

Mr. Ratcliff succeeds Morris Sayre, who was also executive vice president of the Corn Products Refining Company. Mr. Sayre resigned because of the multitude of duties imposed on him through dual connections in New York and Milwaukee.

In addition to Mr. Rhamstine, two other new directors have been added to the Hummel & Downing board, increasing the body from five to seven members. They are Randall A. Ross and Albert S. Etheridge, both of Milwaukee.

◆

▶▶▶ The 55-year service record of *Charles Finger* of the Rolland Paper Company, St. Jerome, Quebec, was rewarded at a dinner meeting of plant executives when he was presented with a check as a token of the company's appreciation. For the past 40 years, Mr. Finger has been boss finisher.

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▶▶▶ A service record of 54 years was terminated recently when *A. W. Parker* retired from his duties with the Worthington Pump and Machinery Corporation, Harrison, New Jersey. Mr. Parker started as a draftsman in 1887, and after serving in a variety of functions entered the publicity department, in which position he was employed until his recent retirement.

BREAKING UP A LOG JAM

Log Jams are the bottle necks of woods operations. Faulty felts are the bottle necks of paper making. Maximum production of paper is curtailed when felts don't function properly.

Draper Felts — custom made to your specifications, will prevent jams or bottle necks in your machines. For details see a ***Draper Representative.***

Draper Felts Favor Efficiency

DRAPER BROTHERS COMPANY

Woolen Manufacturers Since 1856 CANTON, MASS.

OUR REPRESENTATIVES *to serve you*

L. H. BREYFOGLE, Kalamazoo, Mich.
C. K. BEECHER, Delaware, Ohio
W. L. CAMPBELL, Savannah, Ga.
O. J. LELOFF, Vancouver, Wash.
RALPH E. BRIGGS, Canton, Mass.

Necrology

JOHN M. RICHARDSON

Terminating a career of almost a half a century in the manufacturing industry, John M. Richardson, chairman of the board of The Gardner-Richardson Co., Middletown, Ohio, passed away June 10 at the age of 61.

Born in Glendale, Ohio, Mr. Richardson was the son of the late J. C. Richardson who, together with Thomas J. Haldeman, founded the company 75 years ago. He became affiliated with the company 44 years ago and served in many different capacities before he became president in 1915.

A year and a half ago, Mr. Richardson resigned as president of the company and accepted the position as chairman of the board. He also acted as chairman of the board of the Lockland branch.

Surviving are his widow, a daughter, and son, John, Jr., who is assistant treasurer of the company. Two brothers, W. H. and Paul, are vice president and secretary-treasurer, respectively, of the company.

CHARLES LEVIS

Charles Levis, retired president of the Curtis Paper Company, Newark, Delaware, and active in the paper manufacturing industry for 60 years, passed away on June 10 at his home in Wilmington, Delaware.

In 1892, Mr. Levis entered the employ of Curtis & Brother, predecessor of the present Curtis Paper Company at Newark. He served in various capacities; as salesman, as head of the company's Philadelphia office, and as president. At the time of his retirement as president six months ago, he was elected honorary chairman of the board. Surviving are his widow, two sons, and two daughters.

◆

MAX T. HARTLEY

A fatal automobile accident on June 26 caused the passing of Max T. Hartley, vice president of The Sorg Paper Company, Middletown, Ohio. He was 78 years of age.

Mr. Hartley became treasurer of the company in 1899, and later served as secretary-treasurer before being made vice president. Before his connection with The Sorg Company, he was associated with predecessor companies. He is survived by his widow.

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STANLEY WARZALA

Stanley Warzala, the former supervisor of safety at the Calco Chemical Division of American Cyanamid Company, Bound Brook, New Jersey, passed away recently at the age of 63. The enviable safety record that this company now holds is largely due to the efforts of Mr. Warzala, who for the past 25 years has exerted every possibility in the development of safety methods in the chemical industry.

In January of this year, Mr. Warzala was appointed special agent of the Department of Labor to promote safety and industrial health in New Jersey industries receiving government contracts. Other important positions he has held in this field are: general chairman of the Chemical Division of the National Safety Council, an organization made up of more than 400 industrial organizations; treasurer of the New Jersey Industrial Safety Committee; and a member of the Managing Committee of the Eastern Safety Conference.

Born in Polish Austria, he came to America in 1893, and worked as a coal miner until he joined the army during the Spanish American War.

Surviving are his widow and a son.

SAVES $10,000 PER YEAR

In this paper bag factory, a three-runway motor-driven crane with a one-ton electrically-operated carrier and paper-roll grab, are controlled by one operator in the carrier cab. Complete coverage of the 5,000-roll storage area is provided.

The grab is designed to permit the cab operator to rotate the load from vertical to horizontal or vice-versa.

A saving of $10,000 per year was made through increased handling efficiency and elimination of damage losses due to crushed edges, cuts, tears, etc.

You, too, can save with Cleveland Tramrail. Our representative will gladly discuss with you this and other cost-cutting paper-handling equipment.

CLEVELAND TRAMRAIL DIVISION
THE CLEVELAND CRANE & ENGINEERING CO.
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OVERHEAD MATERIALS HANDLING EQUIPMENT
Other products: CLEVELAND CRANES and STEELWELD MACHINERY

As necessary IN PAPER MAKING AS THE MACHINES THEMSELVES!

EFFICIENT lubrication systems are important factors in keeping machines running—in assuring low cost, uninterrupted production schedules!

For years, Bowser Oiling Systems have been the accepted standard in the paper industry—day after day proving their efficiency in reducing costs, minimizing shut-downs and reducing wear. All of which is definitely established by the fact that most paper mills use them—and that practically all of the world's paper production records have been made on Bowser lubricated machines.

To ably assist you, Bowser maintains a corps of experienced lubrication engineers—engineers who will be glad to consult with you in designing an oiling system to meet your individual needs—a system that will assure the utmost in economy and efficiency.

For time-tried, dependable Paper Mill Oiling Systems—consult Bowser!

S. F. BOWSER & COMPANY, INC
FORT WAYNE, INDIANA

For the Paper Industry
Bowser Manufactures

Oiling Systems

- For Dryer Sections
- For Chain Drives on Dryers
- For Calenders
- For Jordans
- For Compressors
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BOWSER ESTABLISHED 1885

PAPER MILL OILING SYSTEMS

Convention Papers . . . Abridged

The Effect of Improper Drying on Quality

FREDERICK C. STAMM
Armstrong Machine Works

Troubles from *cockle* and *curl* can be eliminated by the proper control of temperature during the drying of the sheet.

This matter of graduated temperature control is not new. For years, superintendents have agreed that lower temperatures at the wet end are desirable, and for years, they have been trying to get these lower temperatures by closing up the hand valves on the first few dryers. In fact, many mills are doing this very thing today, although it generally leads to trouble and is sooner or later done away with. A cold, sweating, rusting dryer is much more objectionable than one which is too hot.

When well hydrated stock is put over the dryers, the reaction is far different than with free stock the tendency to stick and pick on the first wet-end dryers is very pronounced. The tendency to cockle on the first few dryers is also increased, although this is really more of a blister than it is a cockle. The overall shrinkage of the sheet is tremendously increased, and from this shrinkage develops all of the major troubles from cockle and curl.

The material which is picked off the sheet coats the dryer and this coating gradually burns on until the whole surface is rough and bumpy, a condition which will certainly harm the surface of a fine printing sheet. Furthermore, any picking from the sheet tends to lift the surface which results in poor finish and fuzz and this condition can never be eliminated by the calendars.

The remedy for this condition is obvious. Keep your wet-end dryers down in temperature. Start the first wet-end dryer at about 140 deg. and gradually increase this over five or six dryers until you reach the full steam pressure carried on the main section of the machine. However, be sure that this increase is GRADUAL. Otherwise, you may find that all you have done is to move the point of picking further down the machine. Sticking and picking can definitely be eliminated by proper graduation at the wet end.

The problem of cockle and curl is much more complicated to deal with. First of all, there is no question but what both cockle and curl are fundamentally due to an unequal tension in the sheet, and that this tension is set up during the process of drying. Furthermore, this tension is a direct function of the shrinkage. Thus the greater the shrinkage, the greater will be the tendency to cockle and curl.

During the first stages of drying, the fibers are free to slide on each other, there is no bonding as yet, and thus, there can be no tension in the sheet. As the free water is driven off, we reach a stage where the combined or hydrated water starts to evaporate. At this critical point, bonding between the fibers starts to take place, and from here on the greater part of your shrinkage takes place. *During this bonding period, any unequal tension which is set up in the sheet, will result in curl and cockle at the reel.*

It has been pretty well established that graduated temperatures at this critical point do benefit the sheet considerably by slowing down the shrinkage so that the fibers get a chance to equalize the tension before they are finally and firmly bonded. Just how much graduation is necessary to obtain the desired results is something we cannot say. Some sheets may require quite a lot; others, very little. For this reason, the control should be flexible enough to enable the superintendent to quickly adjust the dryers to any desired temperature.

Thus graduated temperatures at the wet end of the machine will eliminate picking and also prevent blistering of the sheet. Graduated temperatures at the dry end will slow down the final drying, ease up on the shrinkage, and allow the sheet to equalize itself before the final bonding takes place. If the sheet is equalized when this final bonding takes place, there will be no curling or cockle. Sizing is also directly improved by careful handling of the temperatures.

No control, however good it may be, can undo the harm which is caused by poor operating conditions on the rest of the machine.

First of all, a sheet which is poorly formed will dry uneven, and although temperature control will help, it can never entirely eliminate the cockle which is caused by this poor formation. Second, a two-sided sheet will have a definite tendency to curl due to the different shrinkage of the two sides. Poor ventilation, which we will say leaves the bottom dryer felt wet and the top felt dry, will have a tendency to bond the fibers on the top side ahead of those on the bottom side and the result will be curl. You may be carrying the same weights on both your top and bottom dryer felts, but due to friction and poor arrangement of pulleys, one felt may be running much slacker than the other. The result will be curl, and maybe cockle as well.

You may be operating with both your dryer felts too slack, which will certainly set up an ideal condition to produce cockle. And on this question of dryer felt tension, we certainly should make a much greater effort to study the problem than we have in the past. The average machine today operates with about 4 lb. tension per inch of width. That is figuring the direct weight which is being carried on the cable. Friction and poor pulley alignment may cut this down to one or two pounds. The average machine builder designs for about 15 lb. tension. Tight dryer felts help tremendously to increase the capacity of the machine and at the same time tend to eliminate curling and cockling to a great extent.

You may also find that a study of your stock preparation will help you in this matter of cockle. Remember that the more you hydrate, the more shrinkage you will have and the more tendency to cockle.

Sandy Hill-Bertrams Flow Distributor Control of Approach Flow to the Fourdrinier

ALLEN A. LOWE, Field Engineer
Sandy Hill Iron & Brass Works

This paper will concern itself with the use of the Sandy Hill-Bertrams Flow Distributor to solve the problem of the proper distribution of paper stock as it is delivered into the pond of a fourdrienier machine.

In the Sandy Hill-Bertrams Flow Distributor, the entire flow of stock to be delivered to the slice is concentrated in one pipe to eliminate effect of uneven concentrations. This flow is divided mechanically until it is delivered onto the apron board in several equal currents. The division is made by multiple manifold.

One feature of the approach flow is that the single entry pipe may come from any direction, and represent a combination of any number of streams dumping into the box leading to the pipe with any irregularity of spacing across the width of the machine which may occur.

Another feature of the approach flow is the elimination of the trapping of air.

The materials with which the distributor is built preclude, to a great degree, accumulations of stock. These materials are high grade mahogany for two sides of the passages, and rubber on the other two.

In changing from the standard type of headbox to the flow distributor, a number of showers can usually be eliminated. The papermaker will, in using the flow distributor, compensate for the loss of shower water by adding more white water as make-up water, and all this will pass through the flow distributor.

As far as our present experience goes, the following grades and weights have been made on machines equipped with the Bertram Flow Distributor: toilet tissue from nine to thirteen pounds basis weight, made at speeds up to six hundred feet; waxing tissue with

Abridgments have been prepared of a large number of the papers presented at the annual convention of the American Pulp and Paper Mill Superintendents Association, which met at Poland Spring, Maine, June 17-19, 1941. The first installment is published this month. Other installments will appear in succeeding issues.

PERFORMANCE

The YARDSTICK OF ACCEPTANCE

PERFORMANCE is the yardstick of Acceptance when it comes to valves.

The steady increase in the demand for O. I. C.'s gives indication of the growing preference for these husky bronze and iron valves as they continue to demonstrate their efficiency in all kinds of service. For the amazing ability of O. I. C.'s to render LONGER UNINTERRUPTED service with lower replacement and maintenance costs and minimum over-all costs, is winning them new users daily.

The many benefits derived from the use of O. I. C. Valves have been proven over and over — in chemical plants . . . power plants . . . public utilities . . . paper mills . . . the oil industry . . . textile plants . . . tanneries . . . soap plants . . . packing houses . . . railroads . . . in industry everywhere.

You may think you are getting maximum service with the valves you now are using, but if you'll put O. I. C.'s on your lines, you'll soon be convinced of their greater economy and efficiency.

It will pay you to consult your nearest O. I. C. Distributor now . . . to replace with O. I. C.'s and let their performance records speak for themselves.

TYPICAL of the manner in which key plants on America's industrial front are specifying O. I. C.'s and relying upon them to give longer uninterrupted service, with positive flow control and lower maintenance costs, is the battalion of giant O. I. C.'s illustrated above and just placed in service in a large chemical plant. The picture shows only part of the O. I. C. gate valves included in this large order.

Your plant operations must be economical and efficient. Avoid costly plant delays due to valve failure by replacing with and standardizing on O. I. C.'s. Join the growing number of O. I. C. users, all of whom are saying:

"Oh I See! Lower Costs with O. I. C.'s."

IRON BODY BRONZE MOUNTED OR ALL IRON O. I. C. GATE VALVES

Complete range of sizes . . . extra rugged construction to reduce accident hazard . . . greater over-all weight . . . greater ease and maximum efficiency of operation . . . simplicity of construction with free accessibility of all parts . . guides cast integrally, insuring positive wedge alignment . . . positive shut-off without jamming, sticking or freezing.

OIC

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Quality Leaders in Valve Manufacture Since 1883

TRADE MARK

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Dependable, Long Life Waterbury Felts

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Want a harder, smoother SHEET?

PAPER CHEMISTS know that the better hydration from using PQ Silicates results in better felting of the fibres; short fibres as well.

See the difference in your paper and feel it, when you use PQ Silicate in the beater. A trial will convince you.

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a wide range of speeds and weights; newsprint, telephone book, poster, and other similar groundwood papers at weights up to sixty-four pounds basis, and at speeds up to eight hundred feet per minute groundwood specialties ranging from imitation bristols at basis weights of two hundred pounds and paper speeds of one hundred feet, to bond paper at thirty pound basis weight and six hundred feet paper speed; sulphite specialties; waterleaf and absorbent papers at basis weights ranging from eighteen pounds to one hundred fifty pounds, and at speeds ranging from fifty feet per minute to five hundred feet; book and offset at forty pound basis weight and five hundred feet per minute and sulphite index, sulphite envelope, and kraft envelope at speeds ranging from seventy-five feet per minute to four hundred feet, and the weights from seventeen pound to eighty-two pound, folio basis.

The highest consistency encountered so far, has been slightly over one per cent in the headbox. The lowest consistency has been 2/10 of one per cent.

There is no limit to the gallons per minute for which the distributor may be designed; nor is there, considering practice over the whole field of papermaking, any existing range of gallonage on one machine which the flow distributor cannot handle.

The flow distributor should be of greater interest to the multiple cylinder machine operator, than it is to the fourdrinier man.

The cylinder machine operator could install a flow distributor on each vat, and get the best flow control enjoyed by the fourdrinier operator.

We feel that the following papermaking problems have been in a great measure solved by the use of the flow distributor.

1) Reduction of the effect on the sheet of multiple screens.

2) Elimination of the effect of the direction from which the approach flow comes.

3) Reduction of "slugs" from headbox deposits.

4) Improvement of the maintenance of dispersion of the fibers in the flow to the slice. In other words, maintenance of a good mixture.

5) Reduction of "shifting" of the sheet.

6) Reduction of streaks.

7) Improvement of conditions causing cockle.

8) Reduction of variation of weight and caliper across the sheet.

Problems of High Speed Drying

GEORGE R. MARSH
C. J. Merrill, Inc.

The problem of drying coated paper is as old as the coating process itself. Innovations have been tried over a period of years and hundreds of patents have been issued covering various types and arrangements of dryers. Some of these changes were helpful to the industry, while others merely went to show that no two coating mills believe in doing the same thing the same way.

My intention is to speak briefly on some of the practical considerations or problems which confront both the manufacturers of fast dryers and the superintendent who plans to install a 600 ft. to 800 ft. modern machine in his mill.

The first point to consider when contemplating a new installation is space requirements and increased loads that will be put on existing buildings and floors. Insulated steel drying tunnels weigh between 2500 and 3500 lb. per ten-foot section, depending on width. Where fan and heater units are located, the weight per ten-foot section may be as high as six to seven thousand lb.

Floor loads are even heavier and the bracing problem more acute when considering the installation of a constant speed surface winder or Pope reel, used with fast machines. Reels weigh from 12,000 to 18,000 lb. and require substantial foundations. Reels set on wood floors and braced from below by steel beams and columns may be perfectly safe but can still cause serious vibration. Reels themselves are practically vibration free, but if out-of-round cores are used, and a poor start made on a roll of paper, the roll may start bumping as it becomes larger and heavier. In one mill where the reel is supported on steel from below, vibration at times is so bad that an accountant in an office 380 ft. away has difficulty making small figures, due to transmission of vibration through the building to his desk.

If the mill anticipates fast operation, machines should be installed on a floor where solid foundations are possible. If a new installation is made some distance away from existing dry lines or on another floor, sufficient help must be available to operate this one unit efficiently.

A dryer operating at 600 to 800 f.p.m. can dry 30 to 40 tons of paper a day. If an added operator can help reduce waste and broke only ½ of one per cent, his wages are easily earned out of this saving.

Mills with turnaround drying lines have more of a problem in finding space for a flat dryer. In general, to run at 600 f.p.m. with normal weights of coating, a 150 ft. drying chamber with 300 deg. air temperature will be required. Add to this space for the coating machine and 35 to 50 ft. for winding, and a length of 225 to 250 ft. is required for a straight pass unit. Return type dryers have been made and are not impractical. One mill operates two such dryers. The coated sheet runs straight about 80 ft. and returns underneath in the same enclosure. Winders are on the floor below almost directly under the coaters.

Another mill has a smaller return pass dryer arrangement, where the dry sheet is brought back under the coater to a winder directly behind the coater. Both mills operate successfully and appear satisfied with their layout of equipment. As a rule, less trouble in starting up and running all weights and grades will be experienced if space can be found for a straight pass dryer.

No matter what the dryer arrangement may be, the coating machine must be adapted to higher speeds. Bristle brushes for smoothing and spreading coatings seem to be out of the question at 600 f.p.m. or faster. The so-called air brush coater or air doctor has been used for high speed coating, and no doubt, other types of application will be adapted to fast running. Any coater that can run mechanically at 600

to 800 f.p.m., and that will apply a uniform coat without depending on afterflow, should work satisfactorily.

An important point to remember is that dryers can't spread coatings nor correct for improper coating application. Small changes in coating formulas and in body stock may be desirable.

For maximum production with a minimum of dryer length, 100 lb. steam is necessary. Air for drying will be close to 300 deg. Fahr. As far as can be ascertained, these high temperatures are not injurious to either paper or coating if the paper is removed from the dryer with reasonable moisture remaining, say 4 to 5 per cent. Wet bulb temperatures are probably not over 150 to 175 deg. in most dryers. If the sheet is removed from the dryer and wound on the reel with 4 to 5 per cent moisture remaining, the chance of injury to the quality of coating is less than in many festoon dryers. Air around festooned paper may be only 140 to 160 deg. Fahr., but we have taken the temperature of the air being discharged from overhead ducts and found it to be as high as 210 to 220 deg. Where 220 deg. air strikes the sheet as it hangs on the sticks, a small area adjacent to the stick dries in a fraction of a minute. This dry area is subjected to hot, relatively dry air for ten to fifteen minutes before the rest of the sheet is dry enough to remove from the dry line.

Paper at this dry spot undoubtedly reaches a higher temperature than does the stock at the dry end of a fast dryer. Good paper has been dried for years on these lines in spite of their shortcomings, so we do not hesitate to say that just as good paper can be made today at elevated temperatures and speeds.

If the coater, dryer and winder are running correctly and the operators are alert, bull's-eye rolls should be coming to the calender room. Calenders can be operated at full speed without slowdowns or stops. A roll full of flags means slow calendering with stops for breaks, tear-outs, broken edges and cuts. Rolls full of flags are an indication that something is wrong in the coating mill.

The operation of these faster units requires more skill and intelligence on the part of the operators, and it may be two or three months or longer before the operators become proficient enough to make bull's-eye rolls.

Management seems to lack appreciation of the fact that high speed dryers are not experiments, but are real production machines and should be operated as such. We try to make these as fool-proof as possible, but any piece of integrated machinery requires intelligent operation.

Fast drying requires that many operations previously done by the operators be done automatically. Splicing the end of a new roll to the expiring web and bringing the new roll up to speed at the same time was possible by hand operation when speeds were not over 300 to 350 feet and rolls were 60 in. or under. Occasionally, we found a proficient operator who could make flying splices at four to five hundred feet on narrow stock. Now that speeds are up to 600 to 800 feet and widths have in-

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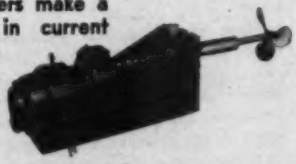

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creased to 90 in. to 100 in., bringing the new roll up to speed and splicing the end must be done automatically, if slowing down is to be avoided.

Several automatic pasters have been installed to take care of pasting and making splices at high speed. They save the operators much lifting and hauling, and will save the cost of a man if several pasters are adjacent. One man can easily prepare rolls of body stock for three or four pasters, apply the adhesive, and make flying splices as needed, to keep dryers running at normal speed. Pasters eliminate entirely the handling of heavy through shafts. Cores are held by chucks running in anti-friction bearings. The paper mill has to furnish cores of uniform length for each width of stock or order. Chucks will compensate for small differences in core lengths, but not more than four to five inches.

The need for uniform lengths does not prove to be much of a consideration once the paper mill is familiar with the requirements.

Pope reels are semi-automatic even for slow speed work, but faster operating has brought to the foreground a problem of cores. Almost all coating mills wind on 5 inch pipe cores. Seldom are they round and in many cases ends are badly burred where core heads fit. Starting a new roll of paper on such cores invites trouble from bumping and vibration. Probably complaints of cracked edges and cuts can be largely traced to this practice. As higher speeds are attained, coating mills will have to follow the example set by the paper mill and wind on heavy, true reel bars, and rewind onto cores suitable for calender stands and cutters.

A big difference in winding practice will be found between machine finish paper and coated paper. Machine finish paper comes to the reel directly after being calendered, is relatively smooth, and has considerable tension applied. Coated stock is rough, full of small cockles from air drying, and will scratch or glaze if dragged over spreader bars. Seldom is there as much tension applied to coated paper at the reel, due to limitations of the tension devices used and to the possibility of weak splices pulling apart.

More recording and indicating instruments are required than was previously the case. Indicators for measuring the slip of paper on rolls or aprons are desirable. Indicators for holding uniform sheet conditions at the reel are also necessary.

It has always been considered that combined moisture content in the sheet and coating have been the determining factor in getting the desired finish. It is a debatable point whether it is moisture in the coating and stock or whether it is a surface condition that is the determining factor. We do know, however, that regardless of what the determining factor may be in finishing, if condition indicators are held constant and the recorder draws a reasonably straight line, the finish will be uniform.

Motor drive systems are usually variable voltage direct current range drives, similar to sectional drives on paper machines, but without some of the refinements found on paper machines. Some of these refinements have been omitted to keep first cost down. As speeds continue to increase, more of these paper machine refinements will be required with less hand control than at present. Combinations of d-c. variable voltage and synchronized a-c. units are being used on one recent installation.

Since slip is an ever present variable in coating mills, motors on each section of a flat dryer combination have been wired with individual vernier rheostats, so that any one unit can be varied in speed five to ten per cent above or below designed speed. Potentiometer rheostat alters speeds of all units in synchronism. The verniers are only to compensate for small changes between sections, due to variable slip or changes in coating or stock.

These vernier rheostats are a cause of many minor troubles, due chiefly to the fact that operators haven't a clear picture in their minds of how all the units should function together. We find that often the verniers will be set to one extreme position or another, either fast or slow, with the result that one or two sections are not quite up in speed, or are too fast. It doesn't seem to occur to operators to bring some verniers to a position that will give additional speed range to other sections. Changes in two or more controls to correct for another seem to be beyond the capacity of some operators.

A few production figures may be interesting. Over a period of six months one machine averaged 3100 lb. coated paper per hour.

Probably the highest production on one machine in a 24-hour period is 117,158 lb. coated, with 2.2 per cent waste. Six orders were run; widths were from 64 in. to 84 in.; order size varied from two rolls to 21 rolls.

Fast paper dryers have been built to accommodate a web of paper as wide as 104 in., and have been designed to operate at 600 to 800 f.p.m. The answer to the question of what the limit of width may be rests with the paper mill. Until uniform stock can be furnished to the coating mill, free from slack edges, variable density, uneven dryness, and with rolls free from punky spots and splices that often pull apart, 90 to 100 in. is as wide as seems practical.

The Problem of Evaluating Coated Bodystocks

J. J. FRIEL
Dill & Collins

This study, extending over a period of a year and a half, has revealed some interesting information concerning just how important it is that the coating mill receive bodystock uniform in basis weight and Densometer across the width of the sheet.

All of the tests were made on the lighter weight papers in the range of 44 pound—25x38-500. While we have a number of results on the heavier weights, there is insufficient data available to give any definite correlations, except to say that, in general, the same trend exists, but that a much greater variation is necessary before either wet curl, buckling dry curl, or wrinkling will show up.

Here are some of the difficulties encountered by the coating department and in succeeding operations that are directly traceable to dry curl.

In removing the sheet from the take-down, the edges are sometimes cracked, and very often cause breaks. In pulling the paper through the guides and tension rolls, it will turn over or under at the edge, depending on which way the curl direction might be. Upon second coating, the sheet difficulties are multiplied many times for here the paper breaks going into the coater, upsetting the brush work. For some minutes after each break, if it is a particularly bad sheet, the brushes might have to be changed several times in the course of eight hours.

In summing up these difficulties, the coating machine has to be slowed down in order to get any good paper at all. Waste and lost time is high in spite of all the effort expended.

The behavior of the paper at the calenders is poor because the smaller cracks that have escaped the coating machine operator cause innumerable breaks. The turn under or over edges mark the cotton rolls and because of the light or heavy edge, the sheet will tend to blow and cut. Here again is low production, high waste, and a considerable loss of time. The finishing department finds the coating defects to be color marking, brush marks, calender defects, calender marks, pasted ends, paste and impressions, and calender cuts.

Wet curl itself does not reveal any great difficulty in coating operation, but it is directly related to buckling, which does bring about operating difficulties.

As the loops move down the rack and the paper dries, these buckles are set in the sheet with the net result that in removing the paper from the take-down the edges are cracked and the coating surface scarred. The cracked edges cause numerous breaks and in order to minimize this the machine speed must be reduced. This, coupled with high waste, lost time, and the fact that the operators are worked overly hard results in low efficiencies. In the next operation (calendering) the slight cracks break due to the high tension that has to be carried because of the hard edges in the rolls, brought about by the non-uniformity of the bodystock. If the variation happens to be great (3 or 4 pounds) the sheet will be baggy, and will blow and cut on the edges. Here again is high waste, lost time, and low production.

Finally, the finishing department receives the paper, and they find it to run high in seconds and waste which, in turn slows up production there.

Wrinkling at the reel end of coater is detrimental at the coater and succeeding operations for the following reasons:

The rolls must be made smaller in diameter. This results in lost time at the coaters and calenders.

Paper that wrinkles at the reel will not lie on the sticks properly going into the rack. This causes stick marks.

Even though the rolls are made smaller in diameter, the small, soft wrinkles will show up as color streaks upon second coating.

If the rolls are made without splitting on the second coat machine, overlapping wrinkles will result. These look very much like

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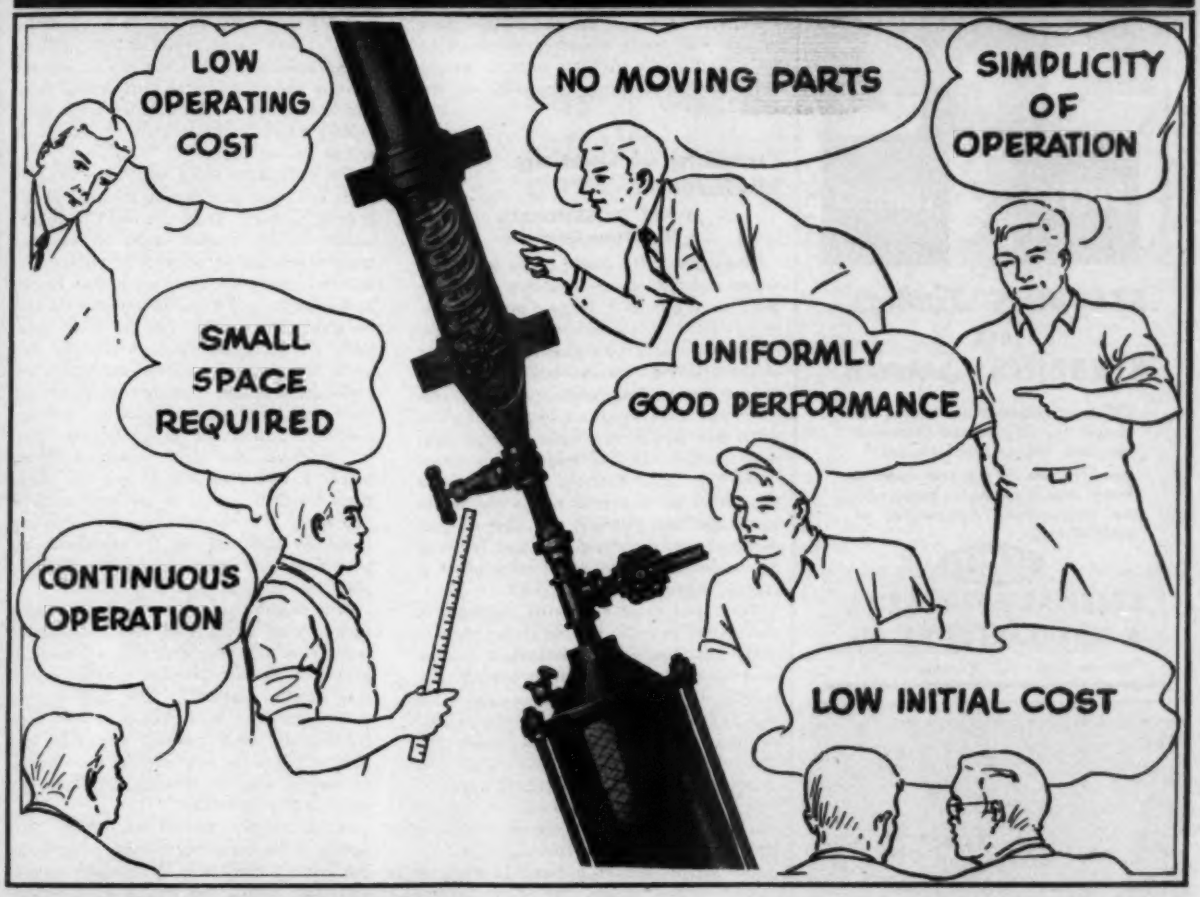

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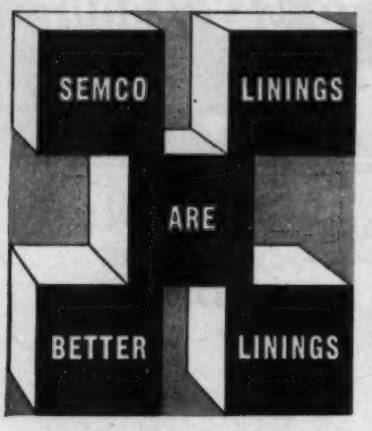

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calender cuts after calendering, and sometimes they mark the calender rolls.

In general, where wrinkling at the reel end of the coater is experienced, the finishing department reports color streaks and calender cuts.

This investigation has shown that high waste, lost time, lost production, and high seconds will result whenever bodystock to the coaters is not uniform in basis weight and Densometer across the width of the sheet.

Frothing of Coating Mixtures

EDWIN SUTERMEISTER
S. D. Warren Company

The surface of a coated paper sometimes shows a defect which is known as "froth pits" or "pin holes." If these pits are large or numerous, they interfere with the printing of the paper by breaking the contour of the halftone dots and making the print appear gray. Measurements of froth pits show that they vary from very small up to 0.064 mm. in diameter, while the high light dots from a 133 line halftone are about 0.074 mm. It is possible, therefore, for a large froth pit to prevent nearly nine-tenths of the dot from printing, and when the pits group themselves along the lines followed by the bristles of the brushes the effect is especially bad.

Froth pits must necessarily originate in the coating mixture, so this is the place to study their formation and cure. It is common knowledge that froth in coating mixtures is of two kinds, a coarse froth on top and a fine froth which is thoroughly emulsified in the body of the coating mixture. The coarse froth is easily taken care of and never reaches the coater to a troublesome degree, so the problem of control comes down to that of how to prevent or cure the finely emulsified kind.

The chief cause of frothing in white or slightly tinted coating seems to be the adhesive used in the mixture. In heavily colored ones it is quite possible that the colors or dyes used may be a contributing factor. Of the adhesives used, casein is an excellent emulsifying agent and is very apt to cause foam; glue is also very likely to cause trouble of this sort, but as it is seldom used it need not be considered in such studies. Starch is a much less effective emulsifying agent, and coating mixtures in which starch is the sole adhesive almost never give trouble from froth pits.

One of the casein solvents which is open to suspicion, yet which seems to give generally satisfactory results, is soda ash. It is customary to use 12 to 16 per cent of this, which is about three times the amount necessary to dissolve the casein completely. If only slightly more than the theoretical amount is used the casein solution foams tremendously, but with the larger amounts no foaming occurs.

The effect of the different pigments used in coating is also open to question. It seems established that coating mixtures with considerable satin white foam more than others, but since such mixtures require much more casein, and this is dissolved with considerably more alkali than for clay coats, there is again doubt as to what causes the foam. Since a mixture of clay, satin white, and water does not foam, it must be assumed that it is the influence of the satin white on the casein which causes the trouble.

Even if the paper coater can do little by adjusting the casein, pigment or alkali, there are still two things he can do to minimize foam. These are to avoid violent mechanical agitation of a nature to whip air into the mixture and to use some antifoaming agent which makes the small bubbles break more rapidly either in the mixture or after it is spread on the paper.

The only other thing which can be done is to use some antifoaming material in the coating mixture. There are many such substances on the market under all sorts of trade names and at all sorts of prices. The materials going into these are seldom known to the coater, and it would probably do him no good if they were. On the other hand, there are many substances which are sold under their common names and which are easily recognizable. Among such things are skim milk, amyl alcohol, gasoline, toluene, pine oil, Turkey red oil, petroleum ether, oil of cloves and many others. Unfortunately, it is not possible to give any directions for their use or to say how much is necessary. It is not even possible to recommend any particular one, for experience has shown that one which may work well in one plant may be quite useless in another.

It is probably often true that antifoaming agents could be omitted over considerable periods of time, but that they are used as insurance against possible trouble which may develop suddenly. The only way to make satisfactory mill trials is to keep careful records while running normally, and then switch to the new material for a period of months and see whether froth pits are more or less numerous.

A satisfactory method for testing such agents in the laboratory consists in agitating the coating mixture in a standard manner and then finding the weight of a definite volume before the froth has a chance to separate. The greater the volume occupied by air the lower the weight, which gives a direct measure of foaming tendencies. By adding different agents in different amounts to the same basic coating mixture this method enables the relative efficiencies of antifrothing agents to be established with reasonable certainty.

A New Means for Reclaiming Pulp

THEODORE P. STEINMETZ
Norwood Engineering Company

Methods for reclaiming fiber from printed waste paper are generally known as deinking systems.

The Norwood system for reclaiming pulp is based upon considerations that the problem is essentially mechanical in two respects. First, the method of disintegrating waste paper into suspended fiber must be such that the fiber is undamaged. Second, the mechanical means for washing must take advantage of the fact that the materials to be removed are lighter in gravity than cellulose fiber.

The Norwood Pulp Reclaimer consists of

a tank which at the top is surrounded by an overflow trough around its entire circumference, the side wall of the trough being greater in height than the tank top. This overflow trough carries away wash water through two drainage outlets. Driving mechanism is mounted above the tank At the bottom center are two pipe connections. One handles drainage of solution so as to increase stock consistency, and the other is for the admission of wash water. Pulp discharge valve is at the side. Also on the side of the tank opposite the pulp discharge valve is a separate fresh water valve controlling a built-in shower head used to clean the machine and also to kill any foaming that might develop. All water and drainage valves are controlled from a platform.

Mounted within the tank is a heavy re-enforced fourdrinier wire lined basket which is smaller in diameter than the inside tank diameter and extends 12 in. above tank top. This basket is the container for waste paper and pulp. Entry of water or solution to or from the basket is through the wire. Pulp discharge valve extends into the basket and is of a design which results in the valve face forming part of the basket wall so that there are no protuberances or recesses that will collect undefibered stock. Waste paper is discharged into this basket through an intake chute located in the 12 in. extension of the basket above the tank top. Extending upward through the basket from a spider which supports the basket bottom are a series of stationary vertical fingers designed to impede motion within the basket and thereby build up friction. Extending downward from a rotating spider at the top of the basket are an opposing series of vertical rotating fingers. The spider carrying these fingers operates at only 15 r.p.m. These fingers are of tear drop design. This design results in maximum internal friction within the paper stock with the least possibility of paper clinging to them and not being defibered. In operation the rounded parts of both series of fingers oppose each other. Because of the design, a swirling motion is set up around each finger which causes them to be washed free of paper. In the event, however, that any stock does collect on these fingers, it is controlled by opening a valve which sprays them.

This spray is also used to wash out the last bit of pulp when it is withdrawn from the machine. Pulp does not collect on the inside of the wire basket due to hydrostatic pressure set up between the basket wall and the inside tank wall. The only point where the wire can clog and interfere with operation of the machine is at the point where the basket extends above the tank top. Wash water overflows into the trough at that point so that the pressure is outward. This difficulty is overcome by means of doctor blades which are let down into place only while pulp is being washed. The area between lower basket wall and inside tank wall is sealed so that at time of washing all wash water must pass upwards through the pulp.

The operation of the machine is not complicated as is indicated by the following explanation of the method used.

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The machine is charged with waste paper and an alkaline solution to a consistency of 5 per cent in terms of pulp. The revolving members agitate this mass slowly. There is only slight friction between pieces of paper for the purpose in this initial stage is to soak the paper in order to loosen the bond between fibers, in addition to attacking the ink, size and filler.

The stock is sufficiently soaked when it starts to break up even with the small amount of friction involved at 5 per cent consistency. Friction is then raised gradually to the maximum possible by permitting the solution to drain off slowly. As the mass thickens, internal friction increases and fiber is pulled apart because of the weakened bond between fibers. But the fiber itself is not damaged or cut. Maximum friction is obtained when all solution has drained off and the mass at the bottom has as high as 25 per cent consistency. Disintegration is more thorough if the stock is then remoistened to about 10 per cent consistency and immediately drained again. If this is done several times, a cycle is set up by which the internal friction is varied from low to high.

The heavier the paper, the longer it takes for a solution to penetrate to all the fiber. Hence heavier stock takes longer than light stock such as news. This difference in timing is taken care of by presoaking of such stock in a special soak chest so that the reclaimer handles only defibering and washing.

When the stock is defibered, the reclaimer becomes a flotation washer by admitting water at the bottom and permitting it to overflow outwards from the top while retaining the fiber within the wire basket. Wash water is distributed evenly by the rotating members. When clean, the pulp is discharged at any desired consistency to a chest.

Chemicals are used in this new system for three purposes:

1. To cause fast penetration of the stock.
2. Emulsify oils, rosins, and waxes.
3. Deflocculate and disperse solid particles.

The main agents accomplishing the above are classed as detergents. As some things work better than others on one constituent of the paper, chemical mixtures containing something special for each problem met with are used.

The system handles mixed colored ledger, white printed or colored stock, magazines, books, news, and kraft including shipping containers. Silica is removed from containers. Some stock, of course, is not worth reclaiming such as, for example, chipboard and any other stocks which were manufactured from printed waste paper without removal of any ink. Parchmentized papers also are unsatisfactory. Other types of waste possibly would not be processed, either because of their high cost or because, being free from ink or coloring matter, they can be used as part of the beater broke.

The output of one reclaimer is six tons daily on a twenty-four hour basis. Any greater tonnage than that is handled by installing them in a battery feeding to one point. The additional equipment required in an installation depends to a great extent on the type of waste paper being processed. A heavy stock should receive preliminary treatment in a soak chest in order to maintain the six ton daily production of each reclaimer. Light weight stock can be fed directly to the reclaimer. Should the stock be dirty it is necessary to run it through a duster. An excellent set-up is a duster feeding directly into a soak chest which discharges into the reclaimer.

Operating costs depend upon quantity of production as well as type of stock processed. The reclaimer alone requires 40 hp. per ton of pulp produced together with 20,000 gallons of water per ton. A duster requires an additional 5 hp. as does the soak chest. Chemical costs vary from $1.50 per ton for news up to $3.00 for mixed colored ledger. One operator can handle two reclaimers which would be fed from one duster and soak chest requiring a separate attendant.

Shrinkage costs depend upon cost of waste paper used. This is averaging 10 per cent in the case of mixed colored ledger and as high as 30 per cent on sulphite magazines containing a large amount of clay.

The Preventing of Damage to Newsprint Paper

R. A. FASOLD, Special Representative Freight Claim Division, Association of American Railroads

Before we get into the newsprint specialization, let me give you a brief outline of how the prevention of loss and damage functions on our American Railroads.

First, there is a National Committee on Prevention of Freight Loss and Damage, consisting of fifteen members, composed of twelve members of the Freight Claim Division and one representative of our Mechanical and Car Service Divisions and the Railway Express Agency. The duties of the Committee are to study the causes of loss and damage in connection with freight traffic and to suggest measures for their prevention. It recommends methods for loading commodities, which are passed upon by the General Committee of the Operating-Transportation Division before publication.

Next, each member road of the Association of American Railroads, which includes our Canadian friends, has delegated an officer to study prevention and apply necessary remedial measures.

Also, the Association of American Railroads maintains a Freight Container Bureau, with headquarters at 30 Vesey Street, New York City, to handle packaging problems. This Bureau has a limited number of technically trained engineers who are at your service—free for the asking.

Our National Committee on June 10 made its annual report to the Freight Claim Division in Denver, Colorado, and under the heading of "Newsprint Paper" said in part—

"Crushed cores and out-of-round rolls are among the principal causes of complaint. Tests by the industry have developed that deformation of the average roll begins under 175 lbs. pressure per inch of roll length and rapidly increases under additional pressure. Much of this can be eradicated by more careful handling of cars, but there are other contributing factors to be considered.

"The method of loading is important. Study indicates that toe-blocks are generally not recommended, although a few receivers still require their use. Very good results have been had by staggering the rolls, which method appears to more evenly distribute the stress under impact, and this method is recommended when it will not materially reduce the tonnage.

"Generally, the method of loading is not left to the discretion of the mills but is controlled by the purchaser. One shipper, of which we have knowledge, loading many cars, found the least damage by tying only the key rolls in the doorway of the car and stowing the other rolls throughout the car reasonably tight without bracing or blocking. Many shippers have gone to the double-unit, floating load with equally good results.

"Unloading from cars and handling in the press rooms are factors to be considered and when there is frequent complaint of damage, an investigation of these methods is recommended."

The best use to which you can put toe-blocks is fireplace wood at shipping point.

There are three alternate loading methods and in my humble opinion, the order of their effectiveness is:

1) The "loose" load without any manner of blocking or bracing, except bands or wood across the car doors, to form a continuous car wall from one end to the other and to prevent rolls from shifting against car doors with the possibility of train accident.

2) The key-roll method in which only the doorway rolls, two, three or five of them, are tied together by metal bands or wire.

3) The floating unit load in which the rolls in each end of the car are tied together in two separate units, one unit in each end.

Under any of these three methods, the rolls should be staggered to break the direct line of stress.

The railroads are furnishing you paper shippers the very best class of cars possible and I am told there is no complaint along that line, however, during winter months, we get some complaints from receivers because of wet paper, resulting from fine snow being sucked into the car at the door ledge area due to a very small crack at the bottom and the high speed of trains.

Some cars are equipped with soft rubber edging around the doors but most are not and it is recommended that you fold several thicknesses of wrapper paper over the door ledge, folding upward when closing the door in such a way that when the door is closed the paper will lay against the door and keep out the elements.

There are many factors affecting damage to newsprint that cannot be controlled by mill superintendents or railroad men, and I refer to destination and press room practices.

Printing presses, like freight trains, are continually being speeded up and from 40,000 to 45,000 complete newspapers per hour is not unusual. The higher the rate of speed of the presses the greater the whip in the leads and the more likelihood of a break, if the roll is not perfectly round.

There seems to be a general misap-

...tal duplex air compressor, motor-driven, in a southern paper mill

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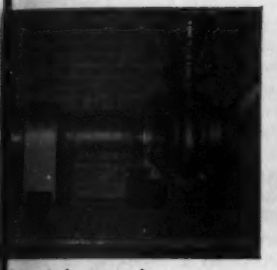

...hgar stock pump, in a ...minent midwestern mill

Motor-driven centrifugal pump, handling white water

Centrifugal 6-stage boiler feed pump, turbine-driven

Centrifugal pump, transferring black liquor and salt cake to a recovery unit

200,000-lb. storage type deaerating ...dwater heater, in paper mill service

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Worthite chemical pumps on multiple-effect evaporator transfer in a southern kraft mill

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prehension among the trade as to the damage caused in classifying cars through hump yards. It was said, in a meeting not long ago, by a shipper of newsprint that damage results by reason of the grade of the hump over which cars are moved. Our investigation does not bear out this statement.

There is also a general misapprehension as to the per cent grade, various figures being cited by laymen which were checked into and, from replies received, covering 80 hump operations in the United States, the steepest per cent grade is 6, ranging on down to a fraction of one per cent.

The average per cent grade coming off the apex of a hump is four, and the average grade in receiving tracks of the classification yard is two-tenths per cent.

As proof that the humping of newsprint paper cars does not in itself cause damage, many cars have been humped and later checked out at destination without damage. The fact that a car goes over a hump therefore is definitely known not to cause damage but, if excessive shock occurs to the load we have, in many instances, out-of-round rolls and, in some instances, crushed cores.

This question of overspeed impacts is receiving more attention today by our member roads than any other one subject and I can truthfully assure you that every reported instance is thoroughly investigated and individual responsibility determined whenever possible.

Direct remedial action is being taken to correct yard grades where this is found necessary and to the extent possible under present financial conditions. Many cars are being equipped with heavy duty draft gears to cushion shock, special underframes are being applied to cars on many lines, as conditions permit, and I assure you that every feasible step is being taken to still further improve rail freight service to our shipping and receiving public.

This is the fifth installment of abridgments of papers presented at the annual meeting of the Technical Association of the Pulp and Paper Industry, held in New York City, February 17-20, 1941. Previous installments appeared in the March, April, May, and June issues, and will be continued until abridgments of all available papers presented at this meeting have been published.

TAPPI Survey of Progress in Water Technology for 1940

LEWIS B. MILLER, Chemical Engineer, Keasbey & Mattison Company

This survey represents an attempt to indicate in a broad way, progress in the field of water technology during the past year. Emphasis has been placed upon those particular phases of the subject which represent new developments or in which outstanding progress has recently been made.

For convenience this report has been subdivided into the following sections:

Section A—Water—the Raw Material
Section B—Process Water for Industry
Section C—Water Treatment
Section D—Water Analysis
Section E—Corrosion
Section F—Boiler Feed Water
Section G—Bacteriology and Biochemistry of Water
Section H—Equipment

A. Water—The Raw Material

The Water Committee of the Technical Association of the Pulp and Paper Industry has investigated through questionnaires submitted to the industry, the chemical nature and sources of the raw waters as well as the nature of treatment and chemical content of waters used as process water in the manufacture of pulp and paper. The complete results of this investigation have been published [TAPPI Water Committee, "Survey of paper mill water requirements." TAPPI Special Report 298 New York, Technical Association of the Pulp and Paper Industry. 52 pp. (Dec. 14, 1939)] as TAPPI Special Report 298. A short resume was presented at the TAPPI Annual Meeting in 1940 [Miller, L. B., "TAPPI survey of paper mill water requirements." Technical Association Papers 23: 433-434 (June, 1940)]. A survey of progress in water technology was presented as a part of the activities of the TAPPI Water Committee [Miller, L. B., "TAPPI survey of progress in water technology for 1939." Technical Association Papers 23:110-113 (June, 1940)].

Reports of the cessation of operations in a paper mill due to water shortage during the past season emphasizes the need for an adequate water supply for pulp and paper manufacture [Anon., "Low water stops machine," *Paper Mill* p. 11 (April 6, 1940)].

The effect of sulphite waste liquor upon organic life was investigated in Finland with the following results. Oats, wheat, and peas grew better upon soil after watering with a dilute solution of sulphite liquor [Jarnefelt, H., "The effect of waste water from pulp mills on organisms." *Finnish Paper Timber J.* 21:686-92 (1939)]. Little damage was done to fish and vegetation, although it was admitted that reduction in O_2 content and presence of H_2S might cause damage to aquatic life.

B. Process Water for Industry

The New England Water Works Association has given special consideration to water quality for industrial uses [New England Water Works Association Committee on Quality Tolerances of Water for Industrial Uses. "Progress Report." *J. New Engl. Water Works Assoc.* 54:261-74 (1940)]. By special permission that portion of the report and table of water tolerances which applies to pulp and paper manufacture is embodied in the present survey. The portion of their report follows herewith:*

"The principal qualities of water that determine its suitability for pulp and papermaking purposes are, color, suspended matter, iron, manganese, hardness, and bacteria. Water of uniform composition and temperature is desirable.

"Water having little or no color is essential for the manufacture of most papers, except certain grades in which color and appearance are not important. For high grade papers, such as writing, book, and other white papers, the color should not exceed 5 ppm and for some products should be nearly zero. Colored papers in which the shade is important should also have water of this quality.

"Suspended matter (turbidity) is troublesome because it becomes entangled with the fibers and causes spots and other imperfections. It may decrease the brightness or strength of the paper. Tolerances range from 5 ppm of turbidity for fine papers to as high as 50 ppm for groundwood pulp. Organic matter is also undesirable, and it has been suggested that the oxygen consumed value of the process water should not exceed 10 to 20 ppm depending on the grade of paper to be manufactured.

"Iron is objectionable in water for paper mills, since cellulose has the property of adsorbing iron from dilute solutions. This adsorption of iron causes a yellowing of white papers and a dulling of all shades of colored papers, particularly of the more delicate tints. It is also very objectionable in photographic papers. The amount of iron permissible depends on the grade of paper manufactured. For high grade papers where color is important the water should contain less than 0.1 ppm Fe, although some high grade writing paper mills are operating with water the iron content of which ranges from 0.1 to 0.2 ppm. If the water is treated by coagulation and filtration, it should be possible to reduce the iron content to 0.05 ppm.

"Manganese in paper mill water is extremely troublesome. It behaves somewhat like iron and causes similar staining and discoloration. It is also troublesome because of its tendency to clog pipe lines with black oxide deposits. It is very objectionable in bleaching operations, as the chlorine bleach will oxidize the manganese to permanganates, which impart a reddish color to the fibers. Tolerances for manganese are lower than those for iron; high grade products may require water containing less than 0.05 ppm as Mn.

"Hard water is objectionable in washing pulp, particularly sulphite pulp, since insoluble calcium and magnesium resinates are formed and deposit on the fiber, making subsequent bleaching difficult. In the soda process, calcium and magnesium salts may be precipitated on the fiber by the caustic soda, carrying along coloring matters that are difficult to bleach. In the coloring of paper, carbonates may cause precipitation of the salts used as mordants. Soft water is desirable in the sizing operation since the mineral salts react with the rosin size and form insoluble resinates, which have no sizing action. Hard waters

are objectionable because of the tendency to cause scale on pipes and other surfaces. This scale breaks away and causes trouble. While soft waters are more desirable, they are not absolutely essential, and many mills operate with hard water. Others, despite the expense of softening the large volumes of water involved, have installed, or are considering, softening plants.

"Difficulties with sheet formation on the paper machine have been experienced in using water containing 25 ppm of carbon dioxide; the permissible limit is probably in the vicinity of 10 ppm. However, the pH of the water should not be over 7.3. Large amounts of silica in the water may make the paper 'tinny,' but definite limits have not yet been established.

"Water for pulp and paper mills should be as free from bacteria as possible because of the tendency of these organisms to form slimes which are objectionable in many ways. It is common practice to treat the water used in pulp and paper mills with chlorine or chloramine, so that slime difficulties are overcome to a large extent. A residual of 0.3 ppm of chlorine or 0.8 ppm of chloramine (as Cl_2) is suggested."

**(We wish to express our appreciation to the New England Water Works Association, and particularly to the secretary, Frank J. Gifford, for permission to publish this portion of their committee progress report).*

C. Water Treatment

The effect of carbonate ion used in excess in water softening has recently received considerable attention [Larson, T. E., "Effect of carbonate ion concentration in water softening." *Ind. Eng. Chem.* 32:1240-1 (1940)] and [Larson, T. E., and Buswell, A. M., *Ind. Eng. Chem.* 32:130 (1940)]. It is pointed out that the use of coagulants such as aluminum compounds are of value in removing precipitated material and in reducing supersaturation.

The unusual flocculating conditions met in an Adka save-all used in treating paper mill white water has recently been discussed [Poor, E. N., "Some aspects of white water flocculation." *Paper Trade J.* 110, No. 10:143 (March 7, 1940); Technical Association Papers 23:320-321 (June, 1940)].

The use of synthetic resins as base exchange materials for the removal of both anions and cations is soon to be placed on a commercial basis. It is claimed that these resins are superior to many natural and synthetic zeolites in base-exchange characteristics [Anon, "Base exchange resins." *Paper Trade J.* (May 16, 1940)] and [Schwartz, M. C., Edwards, W. R., and Boudreaux, G., "Removal of chlorides and sulphates by synthetic resins." Presented at Cincinnati meeting of Am. Chem. Soc. (1940)]. In some respects these behave similarly to carbonaceous zeolites [Lammers, F. J., "Recent developments in water filtration." *Paper Mill* (Aug. 10, 1940). pp. 10-14)].

It has been found that a small quantity of sodium hexametaphosphate added to a water high in temporary hardness will prevent deposition of calcium carbonate scale even under extreme conditions [Hatch, G. B., and Rice, O., "Surface active properties of hexametaphosphate." *Ind. Eng. Chem.* 31:51-7 (1939)].

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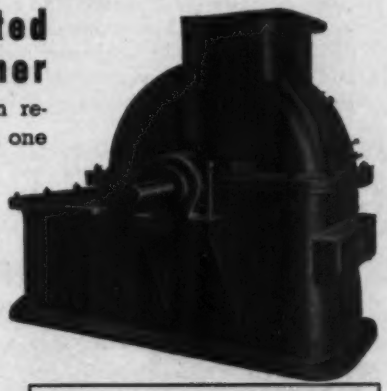

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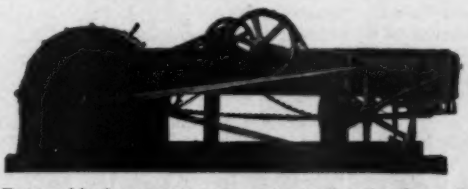

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A thorough discussion of the quality and characteristics of lime most suitable for water treatment has recently been published. Either quick lime or hydrated lime may be used. If the former, it should be of the rapid slaking variety. The products should be high in available lime as indicated by the Ellm's test, sugar test, or Scaife test [Hoover, C. P., "Quality of lime desired for water treatment." A.S.T.M. symposium on lime (1940). pp. 43-47].

A process whereby all ions may be removed from solution by a single treatment has recently been described. This is called the Zerhyd process [Anon, "The Zerhyd process." *Engineering* 148:105 (1939)].

The reaction of free CO_2 with zeolites has been investigated in detail, its deleterious effects noted, and remedial measures suggested [King, R. E., and Smith, O. M., "Reaction of CO_2 with zeolite in a water softener." In. Eng. Chem. 31:727 (1939)].

Several methods of iron (and manganese) removal have been described, by addition of ferrous sulphate to destroy protective colloids [Naumann, E., "Iron removal through addition of iron." *Gas u. Wasser* 82:151 (1939)]; by use of lignin [Nelson, G. H., Levine, M., and Lynch, D. F. J., "Removal of iron by lignin in water treatment." *Paper Trade J.* 108:117 (1939)]; by aeration and filtration [Schumacher, A., "Investigation of the course of iron removal in a rapid sand filter," *Gas u. Wasser* 82:733, 748 (1939); *Abstracts Am. Water Works J.* 32:713 (1940)], and by a combination of methods [Anon., "Iron removal installations." Technical Sanit. Munic. (French) 33:235 (1938); *Abstract Am. Water Works J.* 32:713 (1940)] [Schworm, W. B., "New developments in coagulation of water prior to filtration." Rept. 14th Ann. Missouri Water and Sewerage Conference 10:37-41 (1938)] [Christenson, C. W., and Lavine, I., "Influence of activated silica in sewage coagulation." *Trans. Am. Inst. Chem. Eng.* 36:71-90 (1940)].

The use of sodium silicate with alum as a coagulant in a large scale operation was found desirable [Lordley, H. E., and Smith, M. C., "Studies in the use of sodium silicates." *J. Am. Water Works Assoc.* 31:2149-56 (1939)].

A new type of alum has made its appearance within recent years designated as "activated alum." This product is claimed to have a higher Al_2O_3 content, a reduction by half of the water of crystallization, and to contain approximately 7.5 per cent of finely divided insolubles which prevent caking of the alum in its shipping containers and possess certain advantages in coagulation (Publications of the Activated Alum Corp., 5701 Pennington Avenue, Baltimore, Md.). For paper mill alum usage the "Kamig process" has been advocated which produces alum from clay [Illner, R., "Alum in paper mills." *Paper Mill* (Aug. 3, 1940) p. 17].

Taste and odor control are of great and increasing importance in the treatment of potable waters. In pulp and paper manufacture, taste and odor control are of importance primarily in those paper products used in the packaging of foodstuffs.

Several methods for the partial or complete removal of tastes and odors include: the use of activated carbon; aeration; use of ozone; treatment of raw water with copper sulphate; chlorination, including superchlorination; the use of chlorine and ammonia; various combinations of these treatments.

A pamphlet ("Microbiological control in pulp and paper manufacture." Tech. Reprint 472, Newark, N. J., Wallace and Tiernan, 1940) consisting of several papers presented at the TAPPI 1940 Annual Meeting and published in *Technical Association Papers* and discussing chlorination and superchlorination in relation to taste and odor control in paper manufacture, has been published.

A symposium on taste and odor control consisting of 10 papers in which nearly every method of control is discussed in detail, was published in the Journal of the American Water Works Association (July, 1940).

D. Water Analysis

At the June, 1940, annual meeting of the American Society for Testing Materials a paper was presented in which various methods for reporting the results or water analyses were discussed (Adams, Robert C., "Reporting the results of water analysis," 1940 preprint from A.S.T.M.). The method of reporting analytical results in "equivalents per million" (E.P.M.) was considered as most desirable and was recommended for use by the society.

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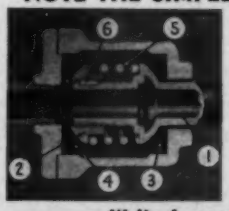

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for the analysis of water is contained in the book entitled "Standard Methods of Analysis" published by the American Public Health Association. In the year book of this association the annual progress report [Norton, J. F., "Standard methods for the examination of water and sewage," *Am. Public Health Assoc. Year Book* 10:110-111 (1939-40)] on the standard methods has been published.

A new method [Pearl, I. A., and Benson, H. K., "A nitrosolignin colorimetric test for sulphite waste liquor in sea water," *Paper Trade J.*, 111:35-6 (Oct. 31, 1940)] has been developed for the detection and quantitative estimation of sulphite waste liquor in sea water.

E. Corrosion

The editorial staff of *Chemical and Metallurgical Engineering* journal has performed a valuable service in publishing the nature and composition of many alloys and metals and the chemical conditions to which they are resistant [Lee, J. A., "Materials of construction," *Chem. & Met. Eng.* 47:597-613 (Sept., 1940)].

The American Society for Testing Materials, through several of its committees, is giving special attention to various aspects of the corrosion problem.

A series of articles dealing with corrosion in steam heating systems, first published in one of the technical journals, has now been combined in reprint form. These articles represent 15 years of work and are probably the most authoritative treatise on this subject which has been prepared [Collins, L. F., and Henderson, E. L., "Corrosion in steam heating systems, its occurrence, causes, and mitigation," *Heating, Piping, Air Conditioning* (Sept.-Dec., 1939; Jan.-May, 1940); reprint obtainable from Leo F. Collins, Detroit Edison Co., Detroit, Mich.)] [Kenworthy, L., "Corrosion troubles in heating and hot water systems," *J. Inst. Heating Ventilating Eng.* 8:85 (1940)].

The Materials of Construction Committee of the Technical Association of the Pulp and Paper Industry has been actively engaged in studies on the causes and effects of corrosion for many years. The committee's latest work was published in 1940 [Lee, James A., *Tech. Assoc. Papers* 23:422-428 (June, 1940)] [Technical Association of the Pulp and Paper Industry, TAPPI Special Report 312 (Dec. 31, 1940)].

F. Boiler Water

The trend in steam generating units continues to be in the direction of higher temperatures and pressures.

Caustic embrittlement or intercrystalline cracking is continuing to receive attention. The trend away from externally caulked, riveted drums towards welded drums of improved design, stress relieving of the metal before the boiler is placed in service and internal caulking where riveted drums are used has greatly reduced opportunity for caustic embrittlement except at tube ends. A clearer understanding of the chemistry of boiler water, particularly of the importance of the alkalinity and soluble silica concentrations in causing caustic embrittlement has resulted in improved feed water treatment [Wesley, W., "The preparation of boiler feed water free of silicic acid and hardness," *Chemisates fabrik* (1940); p. 85-0. *C. A.* 34:4499 (1940); 31:5912 (1937)].

Modern water treatment for high pressure boiler units is discussed in a number of recent articles [Partridge, E. P., and Purdy, A. C., "Water conditioning in steam generation." *Ind. Eng. Chem.* 30:387-99 (1939)] [Straub, F. G., "New trends in boiler feed water treatment," *Trans. Am. Inst. Chem. Eng.* 36:395-401 (1940)].

The function of pH in water treatment has been ably set forth in a recent article [Imhoff, C. E., "The function of pH in water treatment," *Paper Trade J.* 110, No. 14: *TAPPI Sec.* 195 (April 4, 1940); Technical Association Papers 23:348-355 (June, 1940)].

The distribution of CO_2 between water and steam as influenced by pH has been investigated and discussed [Amorosi, A. M., and McDermit, J. R., "The calculation of the distribution of CO_2 between water and steam" *Proc. A.S.T.M.* 39:1204 (1939)].

G. Bacteriology and Biochemistry

The amount of work done in the field of bacteriology and biochemistry with a general bearing on water and on paper products, is so extensive that only a few of the high points may be touched here.

At the TAPPI 1940 Annual Meeting one session of the program was devoted to this subject as applied to paper manufacture and paper products. Following the annual meeting a Bacterial Control Methods Committee was appointed for the purpose of establishing methods of measuring the bacterial content of paper and paperboard.

A pamphlet entitled "Microbiological Control in Pulp and Paper Manufacture" ("Microbiological control in pulp and paper manufacture" Newark, Wallace Tiernan Co., 1940) has been published. This publication discusses in detail the ill effects suffered by the raw materials, finished products and machine felts [Weidner, J. P., "Decrease in felt life due to bacterial action," Technical Association Papers, 23:416-419 (June, 1940)] from the presence of undesirable numbers of microorganisms. Methods of controlling such growths are indicated.

The use of ultraviolet light in sterilizing water is receiving increasing attention [Anon., "City works claims attention of A.S.C.E. at Cincinnati," *Eng. News-Record* 125:823 (1940)].

For the bacteriological examination of water and sewage the A.P.H.A. standard methods are probably most widely used ("Standard methods for examination of water and sewage," New York, Am. Public Health Assoc., 1936). Modified methods are also used ("Practical procedures for the water works operator," Atlanta Georgia Dept. of Public Health, 1939).

The control of algae and mussels is discussed in several articles. Copper sulphate, chlorine, chloramine, and other disinfectants have been used with varying success [Baty, J. B., "Algae control," *Canadian Eng.* 78:20 (1940)] and [Henry, R. W., "Chlorination of water for control of mus-

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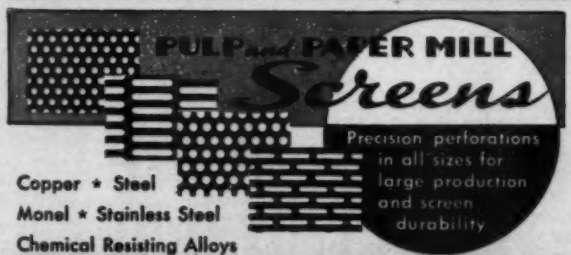

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sels and algae," *Commonwealth Engr.* 26:72 (1938)].

The use of the Cuma system, involving weak silver solutions, produced by electrolysis, has been found effective in combating iron bacteria and fungi [Oosterhold, C. J., "Combating iron bacteria and fungi by the Cuma-system," *Water* (Netherlands) 23:191 (1939). *Abstracts J. Am. Water Works Assoc.* 32:180 (1940)].

H. Equipment

In Chapter 6 of the manual entitled "Water Quality and Treatment" ("Water quality and treatment," New York, Am. Water Works Assoc., 1940) there is an excellent discussion of equipment for storing, handling, and feeding chemicals made use of in water treatment.

A new filter medium consisting of magnetite has recently been placed in use on a commercial scale ("The Automatic Magnetite Filter," Filtration Equipment Corp., 10 East 40th Street, New York City, Mfgr.; marketed by Dorr Co., 570 Lexington Ave., New York City).

The Palmer filter bed agitator ("The Palmer Filter Bed Agitator," Baltimore, Activated Alum Corp.) is said to perform a superior job of washing rapid sand filters [Rehler, J. E., "Experiences with the Palmer filter agitator at Olean," *J. Am. Water Works Assoc.* 32:1381-4 (1940)].

Several types of equipment making use of sludge recirculation for improving flocculation in water treatment have appeared within the last few years and are receiving much attention in the technical literature. Industrial bulletins ("The Dorrco Flocculator," Bull, Dorr Co.), ("The Accelator," Bull., Int. Filter Co.), ("Floctrol," Bull., Jeffrey Mfg. Co.) and ("The Spaulding Precipitator," Permutit Company, 330 West 42nd Street, New York City) describing these equipments have been put out by several manufacturers and dealers.

Both the Adka and Sveen-Pedersen saveralls are gaining favor for the treatment of paper mill white waters.

The Mechanism of Softening Paper

C. M. CONNOR[1] and A. H. NADELMANN[2]

The expressions "softener," "softened," and "softening" are used intentionally instead of the words "plasticizer," "plasticized," and "plasticizing." The latter ones imply properties which are typical for plastics, in other words, for substances which, according to Webster (Webster, N., *New International Dictionary of the English Language*, 2nd ed., unabridged, Springfield, Mass., G. & C. Merriam Co., 1934), are capable of being deformed continuously and permanently in any direction without rupture under a stress exceeding the yield value. That paper does not assume the properties of a typical plastic by treatment with a plasticizer is evident.

The expressions softener, softened, and softening on the other hand convey that paper by treatment with a softener obtains or retains the quality of softness, a property which has been defined by Clark [Clark, J. d'A., *Paper Trade J.* 100, No. 13:41 (March 26, 1935); *Tech. Assoc. Papers* 18:234-237 (June, 1935)] and which can be evaluated and measured by means of a softness tester according to TAPPI Standard T 451 m-40 [TAPPI Standard T 451 m-40, New York, Technical Association of the Pulp and Paper Industry (1940); *Paper Trade J.* 111, No. 22:123 (Nov. 28, 1940)].

The Nonfibrous Raw Materials Committee of the Technical Association of the Pulp and Paper Industry started giving short reports on plasticizers in 1936 and has been continuing to do so.

More elaborate work has been done in laboratories of companies interested in manufacture and sale of a particular kind of softener. Leete [Leete, J. F., *Paper Mill* 58, No. 28:21-22 (July 13, 1935)] emphasizes the value of invert sugar as a softener and plasticizer in the manufacture and converting of paper. Interesting is his statement that, under proper conditions, pulp is able to absorb or bind a more or less definite amount of invert sugar in such a manner that it cannot be washed out by water.

Pike [Pike, N. R., *Tech. Assoc. Papers* 19:224-227 (June, 1936)] in his paper on invert sugar contends that softening of paper is the result of fiber lubrication. This lubrication is caused either by hygrocopicity of the softener and consequently increased moisture content of the fibrous material or by actual lubricating properties of the softener. Pike differentiates between: (1)

(1) Technical Director (2) Research Chemist, The Glassine Paper Company.

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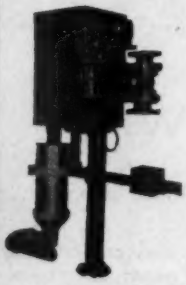

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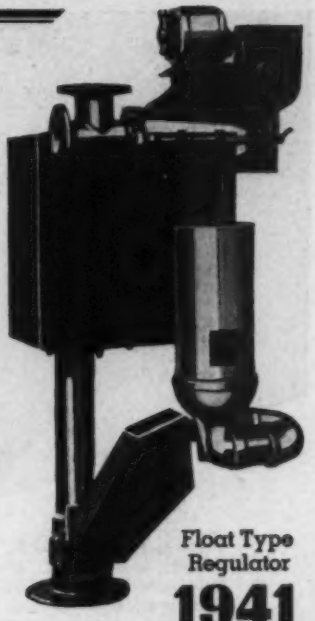

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lubricating, non-hygroscopic softeners—e. g., essential oils and water-miscible mineral oils; (2) non-lubricating, hygroscopic salts; and (3) lubricating and hygroscopic softeners—e. g., glycerine, invert sugar, corn syrup, dextrose, glycols, mannitol, and sorbitol.

Many facts pertaining to the use of glycerine in paper making have been compiled and reported by Leffingwell and Lesser [Leffingwell, G., *Paper Ind.*, 18, No. 6:463-464 (Sept., 1936)], [Leffingwell, G., and Lesser, M. A., *Paper Ind.* 20, No. 1:44-46 (April, 1938)] and [Leffingwell, G., and Lesser, M. A., *Tech. Assoc. Papers* 22:169-173 (June, 1939)]. As to the theory of softening, they assume that glycerine exhibits a dual softening function of increasing the moisture content of the paper and serving to lubricate the fibers. Papers containing hydrated cellulose use the action of glycerine to maintain the pliability, according to the authors.

Hardenberg [Hardenberg, W. L., *Paper Mill* 62, No. 7:22 (Feb. 18, 1939)], in his experimental work on glycerine treated paper towels and tissues, finds, in agreement with Pike that 5 per cent glycerine in paper decreases the moisture content of the sheet at low relative humidity, but that at high relative humidity a considerable moisture pick-up is to be observed.

In addition to the above publications Frorer's [Frorer, J. R., *Chem. Ind.* 41, No. 6:601-602 (Dec., 1937)] and Matagrin's [Matagrin, A., *Papeterie* 58, No. 23:1077-1079 (Dec. 10, 1936); *Papeterie* 59, No. 2:7 (Jan. 25, 1937)], [Matagrin, A., *Industrie Chimique* 24:514-518 (1937)] and [Matagrin, A., *Chem. Ztg.* 62, No. 22:196-197 (March 16, 1938)] papers on sorbitol and its use and the publications by Wrede [Wrede, H., *Wochbl. Papierfbr.* 63, No. 24:465-466 (June 11, 1932); 62, No. 34:642-644 (Aug. 20, 1932)] and [Wrede, H., *Papierfabr.* 28, No. 25A:118-119 (June 1930); 30, No. 29:463-464 (July 17, 1932); 30, No. 34:522-523 (Aug. 21, 1932)] about the use of glucose in the paper industry may be mentioned.

The idea of adding to the paper a substance which increases hygroscopicity is a sound one, because increased hygroscopicity means increased moisture content of the sheet and this results in improved softness.

Glycerine is an excellent softener even at low relative humidity, however, this softening effect seems not to result from the hygroscopicity of the softener and must be caused by other reasons under extremely dry conditions.

Another theory of softening which has been considered is the one depending on fiber lubrication.

Today's conception of lubrication differentiates between: (1) boundary lubrication (thin film or incomplete lubrication), and (2) fluid lubrication (thick film or complete lubrication).

The efficiency of boundary lubrication is determined by many different factors. Some of these are: the structure of the molecules adsorbed at the interface, and adsorptive force at the solid-liquid interface, which varies with the nature of the solid and of the liquid, the structure of the solid face as well as others. Viscosity of the lubricant seems unimportant in boundary lubrication.

In fluid or complete lubrication, the lubricating film is so thick that the molecules of the lubricant are beyond the range of the action of the unbalanced molecular attraction of the solid face. Therefore the frictional resistance is not influenced by the chemical constitution of the lubricant or the nature of the solid face but is affected only by the internal friction of the lubricant itself, in other words by the viscosity of the lubricant. That is why viscous non-polar compounds, as for instance mineral oils, are used for fluid lubrication.

Swelling of fibers and boundary lubrication are closely related processes since both are based on adsorption phenomena.

Since swelling of cellulose fibers is associated with increase of elasticity, plasticity, and softness of the material, the close relationship between the swelling process by beating in water and the softening process at least of glassine and greaseproof papers by treating with softeners seems evident.

Treatment with softeners may serve a dual purpose, either to maintain the initial softness of paper over a prolonged period of time or to make paper by treatment softer than untreated paper. It is possible to maintain the initial softness of paper for a prolonged period of time by substituting adsorbed water molecules for molecules of compounds which on the one hand exert equal swelling efficiency on the fiber and which on the other hand are not as easily and copiously desorbed from the fiber when aging and syneresis occurs. An increase in softness may be imparted to paper either by use of softeners which possess fiber swelling efficiency higher than water or by

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In order to check whether our conception of structural prerequisites for softeners of paper is correct or not, the softening action of triethanolamine was investigated which substance possesses a certain structural similarity to glycerine.

As expected, this substance showed excellent softening efficiency for glassine and greaseproof papers. Unfortunately, its alkalinity, its tendency to absorb carbon dioxide, and its poor light resistance preclude its present commercial use in the glassine and greaseproof field.

Since several methods of measuring swelling efficiency of softeners for cellulose fibers are known and since instruments to measure softness of paper are available, a thorough investigation of the subject of softening paper based on new experimental data should yield useful results.

The Colloidal Behavior of Soap-Starch Systems*

ALFRED M. HEALD, Technical Department
Marathon Paper Mills Company

The work of Richardson and Waite [Richardson, W. A., and Waite, R., *J. Textile Inst.* 24:T 383-416 (1933)] is the only specific reference available in the literature on the reaction between starch and soap.

It was considered desirable to extend the study of the reaction between starch and soap and to learn something of the mechanism of the reaction; and it was conceivable that such a study might elucidate the role of the fatty acid in native starches by further evidence that fatty acid soap can be absorbed, as suggested by Lehrman [Lehrman, Leo, *J. Am. Chem. Soc.* 61:212-213 (1939)].

A 2.5 per cent tapioca starch dispersion was prepared by cooking to boiling over a 40 minute period with constant stirring and after dilution to 0.5 per cent and cooling to room temperature, was treated with varying amounts of different soaps and of one wetting agent.

For this purpose, sodium oleate, laurate, palmitate, linoleate, and stearate, as well as Duponol, Swift's cottonseed soap, and saponified Nelio resin were prepared in 0.01 N solutions by warming the materials in distilled water, cooling to 20 deg. C., and diluting. The above soap and detergent agents were then added to the 0.5 per cent starch sols in varying amounts. Viscosities were measured by use of the Ostwald viscometer at 30 deg. C. [Cannon, M. R., and Fenske, M. R., *Ind. Eng. Chem., Anal. Ed.* 10:297-301 (1938)]. In general there was noted a slight minimum in viscosity when approximately 1.5 per cent soap had been added on the weight of the starch. Increasing amounts of soap caused a remarkable increase in viscosity, which was a maximum in most systems at a concentration of 12 per cent soap. Further addition of soap beyond this maximum lowered the viscosity. Rosin soap did not behave like the fatty acid soaps.

The effect of sodium oleate on the transmittance of the starch sol, as measured in comparison with that of distilled water in a Cenco-Sheard-Sanford photelometer, was essentially opposite to the effect of viscosity.

Sodium oleate affected the viscosity of 0.5 per cent dispersions of various native starches in the same way that it affected tapioca sols. Each starch gave a maximum viscosity when 12 per cent of sodium oleate were added on the weight of the starch. The presence of the soap considerably exaggerated the difference in viscosity between various starches and grades of starch.

When tapioca starch was cooked in formamide, and a formamide solution of sodium oleate was added to the starch sol, the viscosity of the system decreased. Formamide is more polar than water and apparently caused so complete a solvation of the starch that the get structure of the amylopectin was completely dispersed.

A method based on that of Gortner [Gortner, R. A., and Gortner, W. A., *J. Gen. Physiol.* 17:327-339 (1933)], in which the free water is estimated by determining its availability for dissolving sucrose, was used to determine the water-binding power of starch-soap systems. The bound water content of the starch appeared to pass through a minimum at the same concentration of soap which caused maximum viscosity and turbidity.

Sodium oleate increased the electrophoretic mobility of all starches to a maximum when approximately 12 per cent soap was added on the weight of the starch. Further soap addition then decreased the electrophoretic mobility.

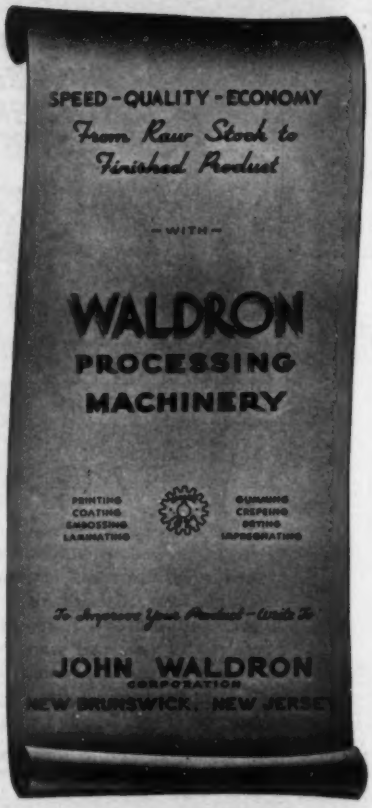
When sodium chloride, potassium iodide, and potassium sulphate solutions were added to a tapioca sol which had been made up to maximum viscosity at 0.5 per cent concentration by the addition of 12.18 per cent sodium oleate on the weight of the starch, the viscosity of the starch-soap complex was lowered markedly. The addition of electrolytes to the complex decreased the electrophoretic mobility of the starch particles from the maximum value caused by the addition of 12.18 per cent sodium oleate.

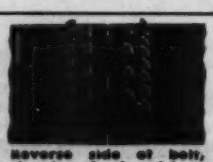
The addition of solutions of aluminum sulphate, aluminum chloride, or calcium chloride to the starch-soap system at maximum viscosity not only lowered the viscosity of the complex but precipitated the starch and soap together apparently as a complex.

The various phenomena described must be attributed to a specific colloidal interaction between starch and soap. When sodium oleate was added to a starch dispersion, the negative oleate ions probably are adsorbed by the starch particles. As the first soap chains attached themselves to the starch particles, they may tend to lower the viscosity of the starch dispersion by displacing water of hydration from the surface of the particles and reducing their volume.

Thus, there is a minimum in viscosity when about 1.5 per cent soap were added

(*) A portion of a thesis submitted in partial fulfillment of the requirements of The Institute of Paper Chemistry for the degree of Doctor of Philosophy from Lawrence College, Appleton, Wis., June, 1939. This work was carried out under the direction of Ben W. Rowland.

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on the weight of the starch. As more oleate ions are adsorbed with further additions of soap, the negative charge on the starch particles increases. At the same time the viscosity increases in dispersions of 0.2 per cent or more concentration, due probably to cohesive forces between the soap chains which were adsorbed on adjacent starch particles. In more dilute systems the viscosity increase did not occur because the particles were sufficiently separated by dilution to overcome cohesive forces between them. Finally, when approximately 12 per cent soap had been added in the case of most systems, there arose a condition of maximum viscosity, turbidity, and charge on the particles, and minimum hydration of the starch particles. Where more soap was added beyond the amount of 12 per cent, the viscosity, turbidity, and charge on the particles decreased from the maxima, while the bound-water content increased again. This was the result of the discharge of the negative starch-soap complex by the excess positively charged sodium ions. The negative charge of the starch-soap complex probably had become so great that it repelled additional negatively charged oleate ions and attracted the excess positive ions in the atmosphere of the solution. It is possible that the continued adsorption of oleate ions increases the negative charge on the starch particles to such an extent that mutual electrostatic repulsion begins to overcome the cohesion between the starch-soap particles. This would cause a decrease in viscosity. Decreasing the charge on the particles by the entrance of sodium ions into the double layer could be a factor in the lowering of the viscosity of the starch-soap complex. Thus, the starch-soap viscosity effect appears to be the result of two factors: An electroviscous effect due to increased charge and a structural, viscosity as a result of get formation due possibly to the cohesive forces between absorbed oleate hydrocarbon chains. The addition of ions which formed insoluble fatty acid salts not only discharged the starch-soap complex but precipitates the starch and soap together as a complex.

The increase in viscosity of a starch sol with the addition of soap is directly proportional to the chain length of the soap. Unsaturation in the soap chain tends to decrease the viscosity rise.

The increase in viscosity due to the addition of a soap to a starch sol is related to the amylopectin get fraction dispersed in the sol. The viscosity rise depended not only on the amount of amylopectin in the starch sol but also on the degree of solvation of the amylopectin. Centrifugal fractionation lowered the viscosity effect, whereas a dispersion of starch in formamide showed no viscosity increase with soap additions. Formamide more completely dispersed the amylopectin get fraction. Modification of the starch by enzymes or oxidizing agents lowered the viscosity effect. The reaction of soap with starch to give a sol of high viscosity appears to be characteristic of only starch amylopectin.

Use of Rubberized Equipment for Resistance of Corrosion

J. F. AMLICKE, Tank Department, Manhattan Rubber Mfg. Division of Raybestos-Manhattan, Inc.

There are two main classifications of rubber linings: soft and semihard or hard rubber. Soft rubber lining has one particular advantage over semihard or hard lining in that it will take a lot more abuse without cracking and will not crack from contraction and expansion of the metal containers. Semihard or hard rubber linings have a distinct advantage over soft rubber because they will not deteriorate as rapidly as soft rubber when used at high temperatures. In order to embody most of the advantages of a hard lining and yet retain some resiliency, a semihard lining has been developed. It is whalebone-like in nature. This material has made it possible for us to line and cover equipment for high-temperature installations.

Linings will seldom crack on a flat or straightaway section, but tend to crack on inside corners due to the contraction and expansion. However, where conditions of service require, suitable expansion joints are built into the rubber-lined items.

Rubber-lined equipment in pulp mills consists of rubber-covered agitators for chlorinating towers, vacuum washers, and save-alls, and rubber-lined piping, fittings, valves, pumps, etc. The solutions handled are mainly chlorinated pulp slurries, as well as conveying the finished pulp from the bleaching unit to the stock chest. Rubber-lined pipe is now being considered for use in connection with the handling of waste black liquor.

Whether hard or soft rubber is used depends on the solution that is to be handled, but regardless of which rubber is recommended it must be properly compounded to resist the action of chlorine. Soft rubber can be used where the temperatures are low. Where higher temperatures are encountered semihard rubber should be considered. Rubber linings are satisfactory for practically all corrosive chemicals which are not solvents for rubber and which are not oxidizing in nature. This includes all inorganic acids and their salts, with the exception of such oxidizing agents as nitric and chromic, and sulphuric acid over 50 per cent concentration. These acids are strongly oxidizing in nature and slowly burn or char the rubber. Under certain conditions rubber linings can be used in sulphuric acid up to 60 per cent concentration, and semihard or hard linings can be used in nitric of about 10 to 15 per cent concentration, at room temperature. Under no circumstances should rubber lining be used for nitric acid at elevated temperatures.

Rubber linings are resistant to practically all alkalies which are not oxidizing in nature, and are even satisfactory for oxidizing alkaline solutions used in the bleaching of pulp.

Ordinarily rubber manufacturers recommend and guarantee their linings for working temperatures up to 180 deg. Fahr. where the solution is not reactive on the rubber at these high temperatures. This, of course, applies to semihard and hard rubbers only. Where soft rubbers are used the temperature should not exceed 125 to 150 deg. Fahr. for best results. Semihard or hard rubber linings have been furnished on equipment for use where temperatures were higher than 180 deg. Fahr. and the linings gave satisfactory service. Linings can be used at high temperatures when the solution is not reactive on the rubber.

The adhesion of the rubber to metal is just as important as a properly compounded rubber, particularly where the equipment is used at elevated temperatures and is subjected to vacuum. Adhesives have been developed that show remarkable adhesion to metal and even at high temperatures retain their adhesive strength and will not leave the metal even under full vacuum, thus making it possible for rubber-lined equipment to meet severe working conditions without failure.

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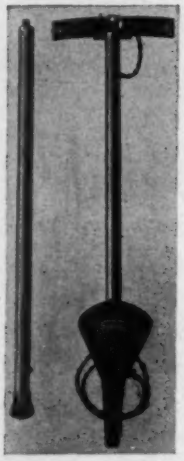

The Cambridge Surface Pyrometer enables you to check surface temperatures of *moving* rolls—quickly and accurately—without stopping the machine. Locate air bound and water-logged rolls before they cause breaks or faulty production that loses money and customers.

Don't gamble with surface temperatures—use a Cambridge Surface Pyrometer . . . save *money, time* and *labor* . . . make better paper at lower cost.

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The Cambridge is made with an extension attachment to reach otherwise inaccessible rolls.

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A MINIMUM of pigment is required to obtain desired results when PARIS II Black is used, because this specially manufactured paper-black has exceptional tinting strength. Test it for your black and gray stocks, and be convinced. Note also these fine characteristics.

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EASE OF WETTING
Freedom from oiliness.
Optimum particle size.

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MANUFACTURER DISTRIBUTOR
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NEW EQUIPMENT AND SUPPLIES

Rubber-Tread Belt Conveyor Idlers

Link-Belt Company, 220 S. Belmont Ave., Indianapolis, Ind., has announced two rubber-tread idlers for belt conveyors, one for

supporting the belt on the return run and the other a troughing idler for absorbing loading shock at the receiving point. Both types of idlers are available for belt widths

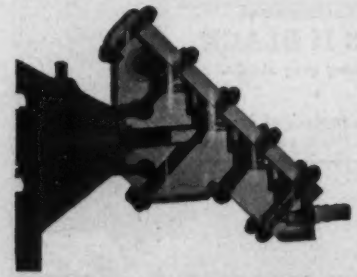
of 14 to 60 inches. Each idler tread consists of a series of rubber-tired rolls suitably spaced and mounted on a roller bearing equipped steel tube.

Glue Spreader

Glue-Fast Equipment Co., Inc., 30 West 15th St., New York City, has announced a glue spreader for use in applying a thin film of glue to the under side of paper surfaces of any width up to 11¾ in. The unit for handling material of maximum width is of bronze construction and measures 9 in. from front to back, 13 in. in width, and 2½ in. high. Its glue tray, which may be removable, holds one quart of glue. The unit can be supplied with thermostatic control. Use of the unit in paper mill finishing rooms for labelling is suggested by the manufacturer.

Two Pump Developments

Milton Roy, 1316 E. Merinard Ave., Philadelphia, has announced the development of a pump with a transparent plastic valve body, the pump being designed for the handling of dilute acids, hypochlorites,



and other chemicals; also the development of an improved type of step-valve for its line of chemical and proportioning pumps.

The pump with the transparent valve body is available in capacities of from ½ to 20 gallons per hour, the body being machined from a solid block of acrylic plastic (Plexiglas). The inlet and outlet hose nipples also are of plastic; the piston is of Hastelloy "C". The plastic construction permits visibility of the flow of liquid being pumped, and the movement of the valve checks and pump piston.

The improved step-type valve makes the interior of the valve body accessible for cleaning by the removal of a single, flat, cover-plate. It is stated by the manufacturer that this valve will automatically discharge all air and eliminate air-binding, and that it also will discharge all small particles of dirt. This value will be available for handling acids, alkalies, boiler-treating chemicals and other liquids against pressures up to 20,000 lb. or more per square inch; also on proportioning pumps and pumps with valve bodies made of transparent plastics.

Splashproof Motor

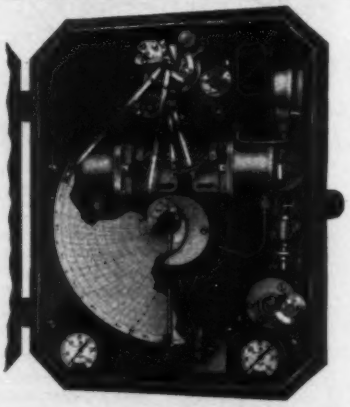
A splashproof, ball-bearing, polyphase induction motor, the *Tri-Clad*, has been announced by the General Electric Company, Schenectady, New York, to supplement its recently announced *Tri-Clad* polyphase and single-phase open general-purpose lines. Especially designed to meet the needs of applications where splashing water and other liquids are present, the motor is made

in sizes from 1 to 15 hp. Its outstanding features include sturdy cast iron stator frame and end shields, Formex wire windings, and protected ball bearings. The ventilated openings of the stator frame and end shields are baffled to block the entrance of splashing liquids. An arrangement of cast baffles within the side openings of the stator frame blocks splashing from the side.

Direct-Set Ratio Controller

Taylor Instrument Companies, Rochester, N. Y., has announced an instrument for applications where a temperature, pressure, rate of flow or liquid level must be controlled in a desired ratio or differential to another related variable. The ratio, throughout the range of 0:1 to 3:1 (direct or inverse), is changed by a simple screw driver adjustment on a calibrated dial.

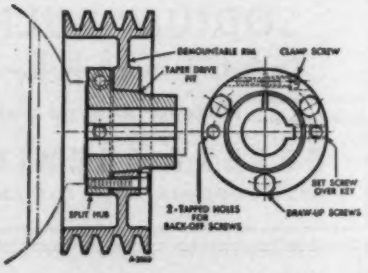
Known as the *Taylor Ratio Controller*, the instrument has two measuring systems —an adjusting system which indicates or records only, and a controlling system which may indicate or record. The adjusting system resets the control point of the



controlling system according to a predetermined ratio. The action of the controlling system is the same as the 120R Series Fulscopes.

Detachable Sheave for V-Belt Drive

A V-belt driver sheave of the detachable type, designated as the *Q-D*, has been announced by Worthington Pump and Machinery Corp., Harrison, N. J., as a standard item in its multi-V-drive line. Each sheave unit consists of a longitudinally-split or clamp hub and a V-grooved rim. The hub is clamped to the shaft by means of a cap screw in its flange and is securely fastened by a standard keyway. The rim is taper-fitted to the hub and is fastened with three draw bolts.



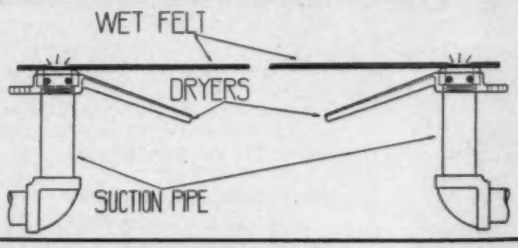
To remove the rim, the draw bolts are withdrawn and two of them are inserted in holes so tapped in the rim that the bolts act as jam screws and bear against the hub, thus forcing the rim off the taper without disturbing the position of the hub.

The type Q-D sheave is available in the complete range of standard driver sizes.

Flexible Coupling

The Falk Corporation, Milwaukee, Wis., has announced a flexible coupling, the *Airflex*, in which the degree of resiliency can be changed to suit a particular application. The coupling consists of a resilient rubber gland, lined with a pre-moulded and pre-vulcanized cylindrical section

Something New



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INCREASES useful life of felt; helps prevent excessive wear.

PREVENTS edges of press roll from wearing down faster than rest of roll.

ALLOWS as much weight to be placed on an old felt as on a new felt.

PREVENTS crushing at edges.

KEEPS edge of felt dry.

These dryers are operated by piping to present vacuum pump through a small diameter pipe. Very little air is required.

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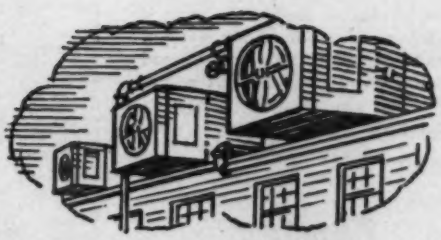


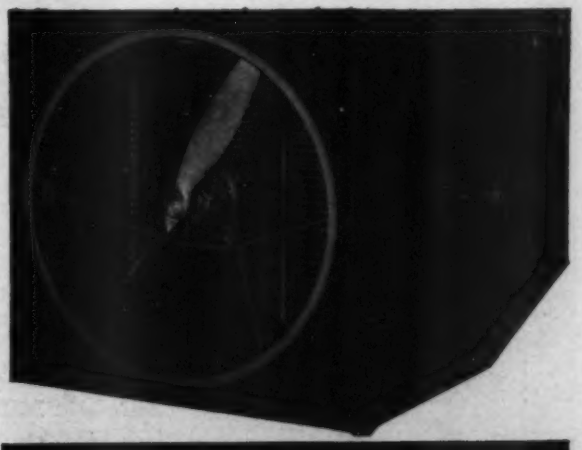
AVERAGE SAVING: $1,198.00 A MONTH

● **In one mill a three-unit installation of the Stickle Economizer for Heat Reclamation resulted in direct saving of 8,000 lbs. of steam an hour. Based on steam costs in this plant, this saving equalled $46.08 a day, or $1,198.00 a month. The increased volume of heated water for showers and beaters resulted in increased production and improved quality of paper. In many plants the application of this system will improve the ventilation of machine room.**

The steam saving indicated represents average of tabulation from daily readings of company's steam flow meters over an adequate testing period. Translated into terms of steam-cost dollars, the steam saving liquidated the cost of the Stickle installation within a few months.

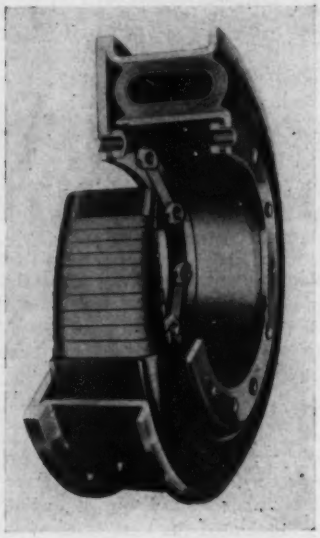
If you are interested in reducing *your* steam costs—improving quality and increasing production—let our engineers make suggestions. They will check your plant and submit a report of their findings, at our expense, and without obligation to you or your company. Ask for detailed information. STICKLE STEAM SPECIALTIES COMPANY, 2225 Valley Avenue, INDIANAPOLIS, IND.

● *The Stickle Economizer for Heat Reclamation represents a major development in modern paper mill equipment to overcome waste and improve operating efficiency. Halftone below shows exhaust end of one of the units of the installation mentioned above.*



STICKLE *Economizer* FOR HEAT RECLAMATION

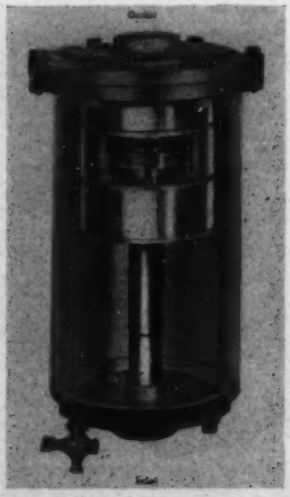
treated to prevent air loss. This lining is covered with multiple, alternating layers of fabric and live rubber, the entire gland being bonded to a steel inner and a steel outer rim. The gland is inflated to proper pressure through a Schrader valve which



will take any hand pump fitting or air nozzle. A rubber-covered metal cap prevents foreign material from entering the valve. Changing the air pressure changes the elasticity of the coupling, which is made in six standard types.

Air, Steam or Gas Separator

Chicago Manufacturing & Distributing Co., 1928 West 46th St., Chicago, has announced a separator for installation on branch air, steam or gas lines to remove water, oil, dirt, scale or rust. Known as the *Textile Separator* (formerly the Hager



Separator), this device utilizes the principle of centrifugal separation in its design. Its body and cleaning unit are of corrosion-resistant, cast aluminum. The separator is made in three models (N, W and S), and, depending upon the model has a capacity range from 15 to 60 c.f.m.

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ROLLS

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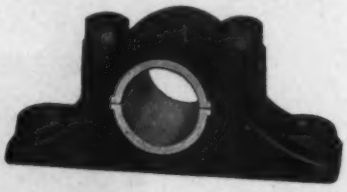
Journal Bearings

The Jeffrey Manufacturing Company, Columbus, Ohio, has announced an improved line of solid and split journal bearings. These bearings have machined bases and faced ends, a smooth gun metal



finish, a rigidly maintained height to center line of shaft, and babbitted bores broached to smooth hard surface, requiring no wearing in.

Both styles are tapped for grease cups or pressure fittings. A storage groove in the top provides distribution of lubricant. In addition, the split bearing has feeder grooves on each side.

Acid Packings for Sulphite Mills

A new series of plastic and flexible metallic packings for centrifugal pumps handling calcium bisulphite cooking liquors has been announced by Johns-Manville, 22 East 40th Street, New York City.

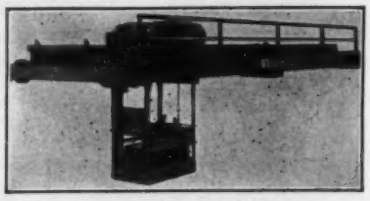
The plastic packing, Style 640, is made from blue African asbestos, non-abrasive metals, lubricants, and an acid resisting binder. It is furnished in both ring and coil forms.

The flexible metallic packing, Style 379, is made by braiding lead alloy ribbons over a core of blue African asbestos, after which it is lubricated. This packing, designed specifically for use as header and follower rings in combination with the plastic rings where service requirements dictate its use, like the plastic packing, is furnished in both ring and spiral forms.

Improved service and longer packing life on both cold and hot acids to 300 deg. Fahr. with the new packing combination are the advantages for these packings which are cited by the manufacturer.

New Line of Cranes

Northern Engineering Works, Detroit, has announced a new line of cranes (Types S. A. and L. S. A.). Some of the features of these cranes, cited by the manufacturer, are: one-piece, all-steel welded trolley frame construction; horizontally split hoist gear

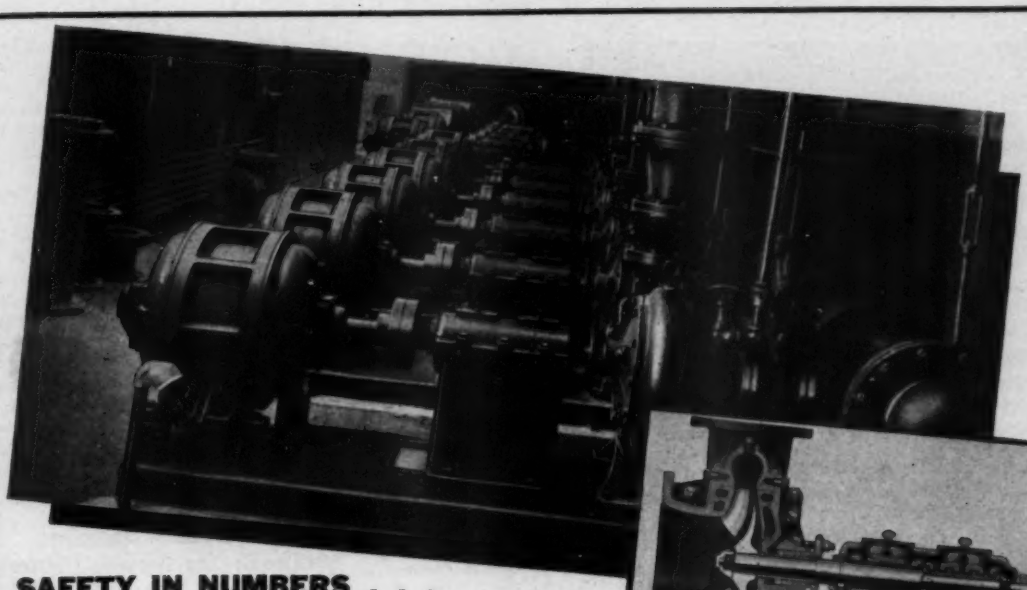


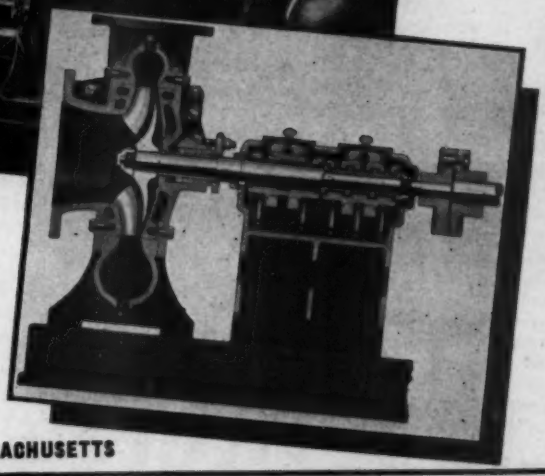
housing; heat-treated, hardened, rolled steel, machine cut hoist gearing; splash lubricated hoist gearing and bearings; removable, safety type mechanical load brake, standard foot mounted ball bearing motors; heavy wide flange triple girder bridge construction and safety type crane wiring construction.

Transparent Gloves

Resistoflex Corporation, Belleville, N. J., has announced the development of a line of transparent gloves for protecting the skin against the action of oils and solvents.

The gloves are available in sizes 8, 9, 10, and 11—the three smaller sizes being produced in 10½ in. and 14 in. lengths, while size 11 is made in 10½ in., 14 in., and 18 in. lengths.





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Why Warren? Because Warren Paper Mill Pumps stick with their jobs and protect against costly service interruptions. Not only that but they do their jobs, year after year, at consistently low operating and maintenance costs. This goes for Warren Stock Pumps, Machine Chest Pumps, Liquor Pumps and Fresh Water Pumps. In other words, for low pumping costs today and tomorrow, specify Warren.

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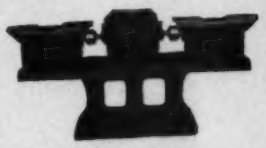
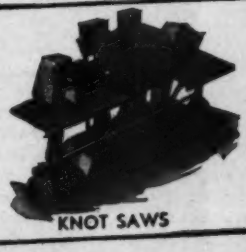
KNOT DRILLS

Wood Room equipment that keeps pace with the changes in the industry, backed by experience and service.



WOOD CLEANERS



KNOT SAWS

Shown here are three items. Send for complete details on Murray wood cleaning equipment—and paper mill equipment too.

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SEALED SLITTERS *provide protection against excessive wear in the modern Johnstone Slitters and Rewinders. One of the Extra Values—No "extra" in Price. Send for Bulletin No. 241.*

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TECHNICAL DEVELOPMENTS

The following abstracts are of the latest developments found in the foreign press.

Bronzes Used in Sulphite Digester Parts

The most stable bronzes were found to be those containing 7.7-8.0% aluminum and 1.5-3.5% iron. High tin bronze had only about one-half the resistance of the Al-Fe bronzes. A bronze containing 4.91% tin, 6.2% lead, and 0.84% zinc showed considerable stability, and more than a high tin bronze containing 0.6% nickel, but its loss of weight in the digester was 50% greater than that of Al-Fe bronzes. Other tin bronzes, while they showed stability immersed in cooking liquor, lost considerable weight when subjected to the conditions of the digestion. Bronzes with manganese contents of 26.0% (iron, 2.0%) showed the lowest stability probably because of non-uniformity of the alloy. Tin bronzes may presumably be replaced in certain digester parts by aluminum-iron bronzes. E. I. Go'lman. Khim. Mashinostroenie (1940) Nos. 11-12; 18-9; through C. A. 35,3083 (1941).

Fiber Classification in Sulphite Pulp Studies

A comprehensive study of the physical and chemical properties of five fractions of pulp obtained by means of the Bauer-McNett classifier. The latter is described, with illustrations. Bleached and unbleached, beaten and unbeaten sulphite pulps and some samples of sulphate pulp were studied. Alpha-cellulose, viscosity and pitch content were determined in the fractions. Pitch concentrates in the finest fractions. Alpha cellulose and viscosity decrease as the fiber lengths shorten in the fractions. Pulp sheets also show a decrease in strength with decreasing fiber length (for folding endurance, pop and tear tests). Strength data obtained from various pulp fractions with varying degrees of beating and freeness are given and discussed. The Strindlund pulp classifier is also described. E. N. Holtan. Papir-J. 28,125-30; 136-40 (1940); through C. A. 35,3087 (1941).

Resin Extraction and Sulphate Digestions

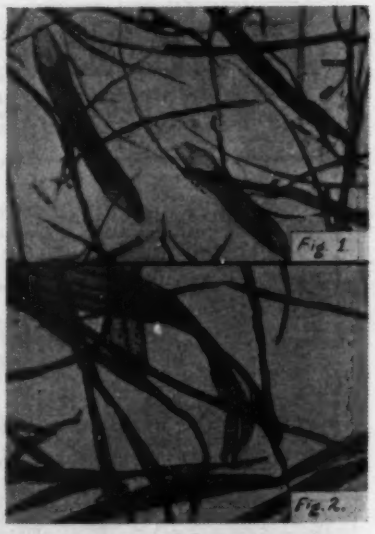
These are actually supplementary experiments in a series dealing with the chemistry of rapid *sulphite* digestion. (Cf. THE PAPER INDUSTRY and PAPER WORLD, Jan. 1941, p. 1088.) Pine pulp prepared by the Asplund process, separated into coarse and fine stuff (containing 3.4-3.5% resins) was treated as follows: heated either with 2% or 6% NaOH, with stock densities of 5, 10, and 20% for two hours, at 50 deg. and 95 deg. C. The higher temperature allowed the greater resin removal. Fine stuff is more easily extracted than coarse stock, and the higher alkali concentration is the more effective. With higher stock densities it becomes very important to insure thorough mixture of stock and alkali, or else it appears as though higher stock densities interfere with rosin extraction (which is not in harmony with industrial experience, and which is not the case, if thorough alkaline impregnation is attained).

The best results in rosin extraction were obtained by pretreating the pulp with 1.5% HCl for 1 hour at 20 deg. C., using a stock density of 5%, and subsequently extracting the finestuff with 6% NaOH at 95 deg. Under these conditions, the fibers retained only 0.42 resins, the lowest of the entire series. The authors also carried out a series of two stage sulphate cooks with pine chips. Preliminary studies were made using a 4.5% alkali concentration (calculated as NaOH, but containing 25% of the sodium as Na_2S) in which the total amount of alkali used was about 30% of the weight of the wood. The digestion was sharply interrupted when a temperature of 140 deg. had just been attained. At this point the product contained 24.4% lignin, and was divided into three parts. One, the control, was not treated mechanically; a second portion was kollerganged for a short time period, and a third aliquot was kollerganged for a long time period. After these treatments (or non-treatment) each fraction was cooked with a fresh portion of the original liquor at 160 deg. during a 2 hour period. Defibration in the kollergang had an adverse effect on the strength of the sheet; all tests showing a weaker pulp after kollerganging, and the weakest properties manifested by the pulp longest in the kollergang. If, however, the initial cooking period was carried further, and the residual lignin dropped to 5%, and if the intermediate defibration was carried out less rigorously (in a mortar), the final digestion yielded a pulp whose strength properties were about the same as those of the undefibrated control. In this case, only the Elmendorf test gave slightly lower results. From this it appears that the extent of the initial cook and the method of mechanical defibration are both of importance. Single-stage sulphate cooks were also made, with varying alkali concentrations and at maximum temperatures of 170 and 177 deg. Down to the point at which a lignin concentration of about 3.5% was reached, there appears to be a linear relationship between pulp yield and per cent of lignin. Below that point, there are marked differences in yield, depending on alkalinity. The sulphate pulps lowest in lignin are not the strongest. The best sulphate pulp obtained was that in which a liquor containing 8% alkali (calculated as NaOH) reacted with the pine at 170 deg. for only *one-third hour*. This pulp still contained 4.28% lignin, but the strength tests showed that it had been the highest quality of the entire series, and the "quality number" was given as over 99. Its folding endurance was very high and so was its resistance to tear.

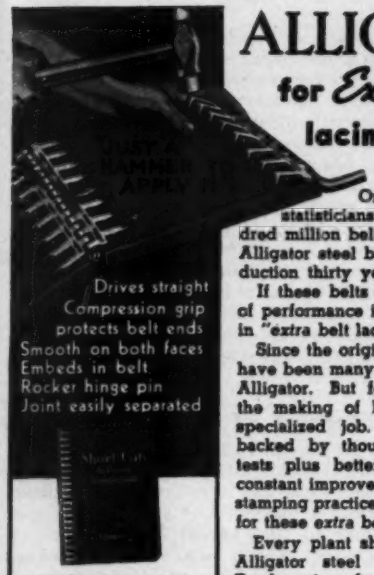
The authors consider sulphate pulping as a topochemical reaction. It progresses in layers, and involves various parts of the cells of the wood, and micellar as well as intermicellar systems. Data confirm previous findings that sulphate pulps may have the same lignin content and still vary widely in physical and chemical properties. The topochemistry of the sulphite cook is very different from that of the sulphate cook. Mechanical disturbances of the cell wall of wood affect the sulphite digestion more adversely than they do the sulphate cook. G. Jayme and L. Grögaard. Papier-Fabr. 38, 149-55 (1940).

The Defibrator Pulping Method; Its Applications

The Asplund defibrator, model C, which is described, serves to produce pulp from lignocellulosic materials, at temperatures higher than 100 deg. It depends on certain thermoplastic properties of the lignified material. The two photomicrographs (X80) show: (1) defibrator stock from birchwood; and (2) defibrator stock from spruce. Asplund stock is especially useful in having the property of being readily dewatered. Its great use is in building board, but other fields are being opened up. In Sweden, spruce and pine serve as raw materials, but elsewhere hardwoods, straw and bagasse



have been used. The article includes a full description, with drawings, of model C; 10 photomicrographs; mathematical calculations, and a heat balance diagram. A graph shows the relationship between power demand and pulping temperature for both hard and softwoods. The greatest "softening" of the hardwoods is at about 155-160 deg. C. That of the softwoods is some 10-15 deg. higher. The power requirements are somewhat greater for the latter. A. Asplund. Wochbl. Papierfabr. 71, 590-5; 607-11 (1940).



ALLIGATOR
for *Extra* belt lacing hours

One of our lunch hour statisticians estimates that two hundred million belts have been laced with Alligator steel belt lacing since its introduction thirty years ago.

If these belts could all tell their story of performance it would be summed up in "extra belt lacing hours."

Since the original patent expired there have been many lacings that looked like Alligator. But fortunately for Alligator the making of belt lacing is a highly specialized job. Years of research, backed by thousands of dynamometer tests plus better alloy steels and the constant improvement in die making and stamping practice, have been responsible for these *extra* belt lacing hours.

Every plant should have a supply of Alligator steel belt lacing on hand. Twelve sizes for flat belts of all types up to ⅝" thick. Special lengths for wide belts. Also made in "Monel" and "Everdur." Order from your supply house.

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15 EDITIONS and still going strong

• Here is a 72-page pocket size manual, "Short Cuts to Power Transmission," that presents a wealth of practical information about transmission and conveyor belts. Offers pointers on how to care for belts, methods of lacing, how to repair conveyor belts, etc.
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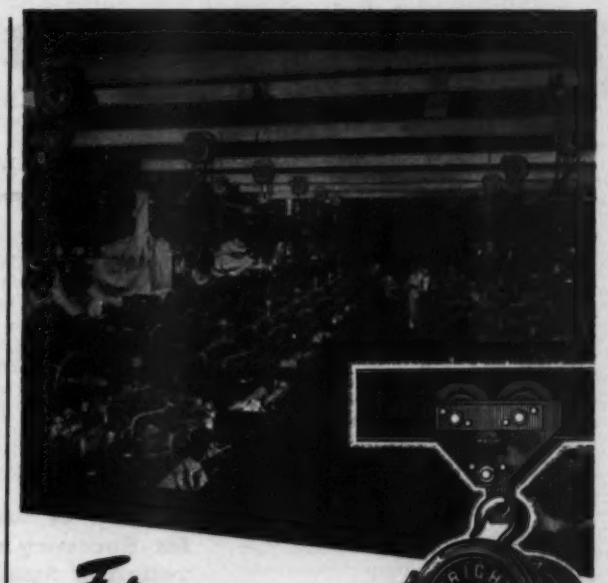

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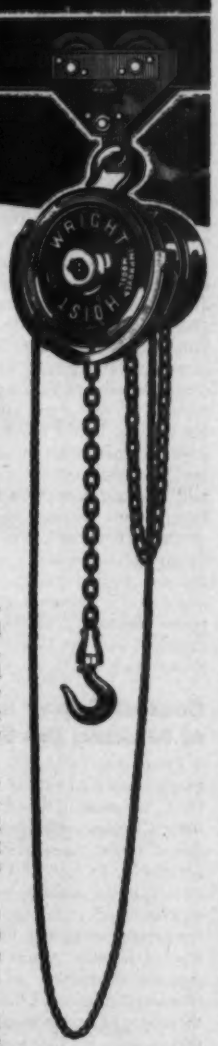

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PAPERMAKING PATENTS

IN THE UNITED STATES—Compiled by James Atkins, Registered Patent Attorney

Inquiries should be addressed to James Atkins, Munsey Building, Washington, D. C.

Pulp Treatment

Patent No. 2,233,641. Elmer R. Ramsey, Larchmont, N. Y., assignor to The Dorr Company, Inc., New York, N. Y., a corporation of Delaware. Application February 9, 1937, Serial No. 124,948. 8 Claims. (Cl. 210—55). In an apparatus for settling the solids from a liquid solids suspension, a tank structure divided into superposed compartments and comprising a lower compartment and an upper compartment vertically superposed immediately above the lower compartment, each compartment adapted to have a sludge bed formed therein from the settling solids, means for overflowing supernatant liquid for each compartment, conduit means constituting a passage from the upper to the lower compartment and characterized by a change substantially from one vertical direction to the opposite vertical direction and therefore adapted in the normal operation of the apparatus to have trapped therein a substantially stationary body of settled solids; means for feeding liquid solids suspension to the upper compartment; means for feeding liquid solids suspension to the lower compartment; means for withdrawing settled solids material from the bottom of said compartment to a point outside the tank; means for withdrawing settled solids material from the lower compartment, and means for supplying a gaseous fluid under pressure to said passage in order and in a manner to interpose a gaseous medium between the settled solids of the upper compartment and the liquid of the lower compartment.

Coated Paper and Method of Making the Same

Patent No. 2,214,566. William J. Montgomery and Donald B. Bradner, Hamilton, Ohio, assignors to The Champion Paper and Fibre Company, Hamilton, Ohio, a corporation of Ohio. Application January 26, 1938, Serial No. 187,077. 2 Claims. (Cl. 91—68). In the making of coated paper the process which comprises applying directly to the surface of smooth finish uncoated paper stock a layer of liquid paper coating composition comprising an aqueous suspension of mineral filler and adhesive in an amount in the order of one pound, and not exceeding two pounds, per thousand square feet of surface, dry basis, and drying said layer of coating composition with its surface in contact with a heated finishing surface until the major portion of the liquid has been evaporated through the uncoated side of the paper stock and the coating material is no longer adherent to the finishing surface.

Method of and Apparatus for Embossing

Patent No. 2,231,171. Leonard E. Randecker, Erie, Pa., assignor to Hammermill Paper Company, Erie, Pa., a corporation of Pennsylvania. Application September 22, 1938, Serial No. 231,147. 12 Claims. (Cl. 101—23). In combination, a pair of embossing rolls, means for passing a sheet of material therethrough, and adjustable tensioning control means positioned immediately in front of and immediately to the rear of said embossing rolls for applying a variable amount of drag and pull on said sheet, thus providing a zone of controlled tension in the sheet in the zone of the nip of said embossing rolls.

Method of and Apparatus for Recovery and Utilization of Sulphur Dioxide in Sulphite Pulp Manufacture

Patent No. 2,235,759. Edward M. Frankel, Cedarhurst, Md., assignor to West Virginia Pulp and Paper Company, New York, N. Y., a corporation of New York. Application August 8, 1935, Serial No. 35,289. Renewed April 25, 1940. 7 Claims. (Cl. 23—131). In a sulphite digesting system, the method of recovering digester relief, which consists in first separating said relief into a liquid and a gaseous component but without substantial cooling of said relief, separating the SO_2 from the non-condensibles in said gaseous component by subjecting said gaseous component to the absorptive action under pressure of a non-alkaline menstruum of a nature as to constitute a component of the cooking liquor for the same or subsequent cooks, thereby dissolving said SO_2 to the substantial exclusion of the non-condensibles, venting the latter from the system, conducting the SO_2-enriched menstruum to an acid accumulator, likewise under pressure, continuing the admission of said menstruum to said accumulator while maintaining the temperature of the latter sufficiently high to release an excess of SO_2 gas, withdrawing said excess SO_2 from said accumulator, and subjecting the SO_2 to cooling to liquefy same.

Paper-Making Machine

Patent No. 2,231,224. David Russell and James Robert Happer, Markinch, Fife, Scotland; Isabella Taylor Happer executor of said James Robert Happer, deceased. Application December 31, 1938, Serial No. 248,696. In Great Britain February 26, 1938. 2 Claims. (Cl. 92—53). A suction roll for spreading and drying a paper-making felt comprising a shell having two series of perforations extending helically around the shell in opposite directions, each starting at a point about midway of the length of the shell with the convolutions thereof spaced transversely along the shell, a pair of wires wrapped helically around the shell between the respective convolutions of said two series of perforations, said wires each starting at a point about midway of the length of the shell and protruding beyond the periphery of the shell and adapted to support a felt of a paper-making machine from which moisture is to be extracted out of contact with the periphery of the shell as the felt passes thereover, the convolutions of said wires affording between them helical spaces extending circumferentially along the periphery of the shell with which spaces said perforations communicate, whereby air may pass circumferentially of the shell between the shell and the felt the entire distance the felt is in contact with the shell, the direction of winding of said wires being such that when the shell is rotating in one direction said wires will tend to spread the felt transversely.

Method of Coating Paper

Patent No. 2,229,621. Donald B. Bradner, Hamilton, Ohio, assignor to The Champion Paper and Fibre Company, Hamilton, Ohio, a corporation of Ohio. Application June 10, 1938, Serial No. 212,877. 11 Claims. (Cl. 92—40). Process of making coated paper which comprises applying an excess of fluent coating composition, comprising a liquid vehicle containing pigment in suspenson and adhesive, to a traveling web of paper which is absorptive to the liquid of the coating composition to a degree to form on the surface of the web a layer of firm filter cake from the pigment in the coating composition adjacent the web while the overlying coating composition remains fluent, then after the formation of the layer of filter cake wiping off substantially all said fluent coating composition without removing substantially any of the filter cake and thereafter drying the coated paper.

Pulp Screen

Patent No. 2,230,321. Henry William Downs, Lenoxville, Quebec, Canada. Application February 23, 1939, Serial No. 258,065. 1 Claim. (Cl. 92—30). A pulp screen comprising a vat frame, screen plate frames adapted to be secured together end to end, means securing the same to the vat frame, key-ways formed transversely in the adjoining faces of the frame and a key engaging said key-ways where two frames are joined, screen plates having turned down edges forming flanges, channel bars extending transversely of the screen plate frames adapted to receive the flanges of adjacent screen plates in meeting relation, a packing strip in the bottom of said channels bridging the joint between the flanges of the screen plates, sealing strips arranged to engage the upper surface of the screen plates, said sealing strips having a lower bearing surface arranged to bear on the upper surface of the ends of the screen plates, a locking plate positioned between the sealing strip, screen plate frame, and the vat frame to which it is secured, said locking plate having a transverse projection on the lower end engaging the transverse key-way in the screen plate frame, a locking nut having a projecting lip thereon, said lip engaging an aperture in the locking plate to bear upward on the same, a bolt having a collar below the nut thereof and lug arranged to bear on the sealing strip as the device is tightened, substantially as set forth.

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who does not bellyache.

—Elbert Hubbard

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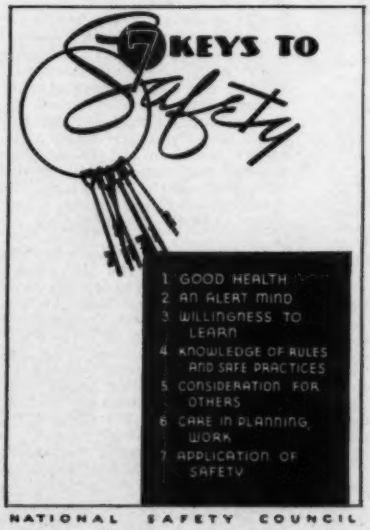

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New Catalogues, Ass'n Reports, and Publications

American Engineering Co., Philadelphia, Pa.—A new booklet discussing the Lo-Hed hoists manufactured by this company has just been released. This catalogue contains information on how to choose a hoist for a particular job, outlining this data in five specific steps. Graphs, illustrations, and diagrams are used extensively to assist those interested in a hoist to make the correct selection.

Babcock & Wilcox Tube Co., Beaver Falls, Pa.—This company has just issued a Technical Data Card (No. 113) giving all the data, in chart form, of the maximum allowable working pressures in pounds per square inch for seamless steel tubes, nipples, or flues. Printed on card board, this chart can be used as a permanent reference.

The Bristol Co., Waterbury, Conn.—A folder (Bulletin 574) dealing with the recording voltmeters and ammeters manufactured by this company has just been released. Labeled diagrams show the inner-workings of the machines and also explain how the machines operate. Illustrations of charts made by the machine are also included.

Cameron Machine Co., Brooklyn, N. Y.—This company has just issued two new folders: the first, entitled "Camachines," includes 28 illustrations of different machines to be used for roll converting jobs. Each machine is described in detail, making it a comparatively simple task to select the machine to fit the job. The second folder deals with shafts for winders, rewinders, coating machines, waxing machines, bag machines, presses, etc. Illustrations together with specifications are included.

Cochrane Corp., Philadelphia, Pa.—A booklet entitled "Feed Water Chemistry" has just been published by this company. The fundamental reactions involved in water softening are discussed. The descriptive material together with reports and formulae should act as an able assistant in solving many water problems. There is also included a chart giving the formula and molecular and equivalent weights of substances frequently appearing in the chemistry of water softening.

Combustion Engineering Co., New York—A new catalogue (No. SS-2) recently published by this company describes the latest design features of the C-E Spreader Stoker. This attractively printed 12-page booklet contains 18 photographic illustrations of assemblies and typical installations. A wide range of fuels that can be burned most economically in this stoker are discussed.

General Refractories Co., Philadelphia, Pa.—This company has just issued a booklet dealing with "Acido," an acid proof brick manufactured by them. The outstanding feature of the publication is the information, based on authoritative tests, of the relative value of different types of tower packing. Graphs are included together with illustrations.

B. F. Goodrich Co., Akron, Ohio—A one-page catalogue section issued by this company includes tables on standard fractional horsepower V-belts. The section describes the balanced construction of the company's V-belt and the advantages of V-drives.

Johns-Manville Co., New York—A new, extensively illustrated catalogue of packings and gaskets, containing service recommendations and suggestions has been issued by this company. In addition to the detailed information, the handbook contains recommendation tables which serve as a guide to proper packing selection for various types of equipment under various service conditions such as: steam, ammonia, acids, caustics, and oils. Many helpful hints are also included.

Lammert & Mann Co., Chicago—This company has just issued a new folder-type publication, entitled "Efficiency: +" which deals with the improved rotary vacuum pumps, compressors, and pressure blowers manufactured by them. Illustrations, specification charts, and diagrams supplement the detailed descriptive material.

Loeb Equipment Supply Co., Chicago—A catalogue has just been issued by this company listing a large variety of new and rebuilt equipment for many different industries, including the paper industry. It is stated that this company acts as dealers and brokers in used machinery and equipment for all process industries from all parts of the country.

Oakite Products, Inc., New York—An interesting article giving concise data on improved methods for cleaning screen plates appears in the May-June issue of Oakite News, the house organ of this company. This company also issued a new 20-page booklet describing the cutting lubricants and grinding coolants manufactured by them. In addition to the many different formulae given for machining ferrous and nonferrous metals, the booklet contains concise data on cleaning and disinfecting cutting and grinding solution tanks and lines.

Rehtron Corp., Chicago, Ill.—This company has just issued a folder announcing the new Rehtron Photoelectric (electric eye) Smoke Indication and Combustion Control Robot. This booklet explains how the smoke detection robot can be attached to any boiler, also giving a description of how the robot itself operates. Specifications are included.

Revere Copper and Brass, Inc., New York—Three new publications, each dealing with the uses of copper and copper alloys in a different industry, have just been issued by this company. The first booklet discusses the variety of applications that copper and its alloys have in the mechanical industries; the second deals with its use in the process industries; and the third with its use in power plants. Each of the publications treat the subject thoroughly with the use of many illustrations, graphs, charts, and tables.

Roots-Connersville Blower Corp., Connersville, Ind.—A new folder (Form VA-102) has just been issued by this company, covering applications of the Victor-Acme blowers and gas pumps for use with a wide variety of oil and gas fired units. This 6-page folder in two colors is profusely illustrated, showing several typical applications. Testimonials from users are also included in the publication.

George Ruehfel Co., Brooklyn, New York—This company has just issued a new catalogue (C-40) on thermometers and hydrometers, giving particular attention to A. S. T. M. and M. C. C. A. thermometers and A. S. T. M. and A. P. I. hydrometers. Suggestions are included for insuring correct hydrometer readings and also a selection chart which lists hydrometers, especially calibrated for more than 50 products. Tables for converting specific gravity readings and also an extensive temperature conversion table are contained in the catalogue.

Worthington Pump and Machinery Corp., Harrison, N. J.—Two new bulletins have just been issued by this company. The first deals with the horizontal duplex plunger power pumps, types KLF, KKF, and KMF. The various features of the pumps are listed and diagrams are included, labeling the various parts of the machine. Charts, giving specifications and data, are included. The second publication is an 11-page booklet discussing the rotary pumps with double-helical gears in detail. Seven different types of these pumps are taken up in detail, with illustrations, features, applications, and charts of each included.

Association Reports

Labor Relations—Several bulletins have been issued recently by the American Paper and Pulp Association, dealing with rulings of the Wage and Hour Division which affect different groups of workers in the industry. If there is any question of reversal of previous rulings or interpretation, communicate with the American Paper and Pulp Association, stating your case clearly.

National Defense (Chlorine)—Following a conference held in the office of the American Paper and Pulp Association, June 10, at which members of the Industry's National Defense Advisory Committee, representatives of the O. P. M., and the Munitions Board of the Army and Navy were present, the O. P. M. requested a voluntary reduction of at least ten per cent in the use of chlorine by the pulp and paper industry. In a report sent from headquarters of the A. P. P. A. by Executive Secretary E. W. Tinker, the details of conclusions reached by the Industry's National Defense Advisory Committee on this subject were set forth.

Waste Sulphite Liquor Disposal—The activities of the Sulphite Pulp Manufacturers Committee on Waste Disposal (a group of mills representing over 90 per cent of the sulphite pulp production in the State of Wisconsin) are set forth in this report just sent out by E. W. Tinker, executive secretary of the American Paper and Pulp Association. Mr. Tinker states that undoubtedly the industry ultimately will be faced with the problem of waste sulphite liquor disposal in very acute form, and this may assert itself in the form of state and federal legislation that may work a hardship on the industry. The report invites the affiliation in this effort of mills outside the State of Wisconsin.

Newsprint Statistics—According to a report issued by the News Print Service Bureau on June 11, newsprint production in Canada during May, 1941, amounted to 284,767 tons and shipments to 291,112 tons. Production in the United States was 90,913 tons and shipments 91,689 tons, making a total United States and Canadian newsprint production of 375,680 tons and shipments of 382,801 tons. During May, 28,725 tons of newsprint were made in Newfoundland, so that the total North American production for the month amounted to 404,405 tons. Total production in May, 1940, was 444,803 tons.

The Canadian mills produced 20,793 tons more in the first five months of 1941 than in the first five months of 1940, which was an increase of one and six tenths per cent. The output in the United States was 6,925 tons or one and six tenths per cent more than in the first five months of 1940; in Newfoundland production was 4,870 tons or three and five tenths per cent more, making a total increase of 32,588 tons, or one and seven tenths per cent more than in the first five months of 1940.

Stocks of newsprint paper at the end of May were 174,044 tons at Canadian mills and 13,527 tons at United States

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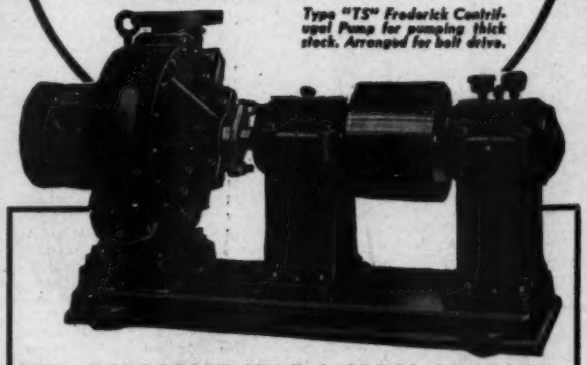

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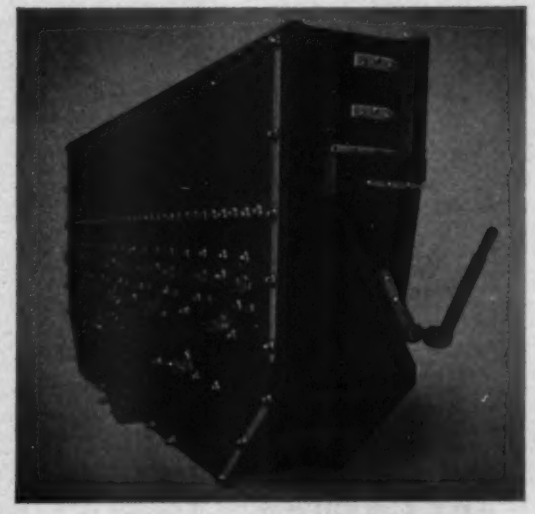

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mills, making a combined total of 187,157 tons compared with 194,692 tons on April 30, 1941, and 221,647 tons at the end of May, 1940.

Legislation and Public Affairs (National Defense—No. 4—Transportation)—J. L. Riegel, president of the American Paper and Pulp Association, stated in a report, on June 9, issued by this organization, that the country is faced with a shortage of railroad cars in the present emergency and it is important that the fullest utilization be made of the existing car supply.

He elaborated by listing three ways to help this situation: (1) purchasing departments should co-operate with suppliers to have each incoming car loaded to its greatest practical capacity, (2) plant managers should make certain that railroad cars are not used for storage purposes, and that incoming cars are unloaded and outgoing cars are loaded with the least possible delay, (3) sales departments should co-operate with customers to increase the amount of paper loaded in each car to the maximum practical capacity.

One additional ton per car in every car loaded is equivalent to adding 40,000 cars to the car supply. A saving of one day in the turnaround time of all cars has the effect of adding 100,000 cars to the supply. The paper industry itself uses not less than 3,000,000 freight cars a year. Adherence to the three points listed above will increase the available car supply in direct ratio to the effort expended in their application. An improvement of only ten per cent in the utility and release of the freight cars used by the paper and pulp industry would at once increase the supply by 300,000 cars annually.

The chairman, secretary, and New York members of our Traffic Committee, the executive secretary of the association, and the undersigned met at a conference in New York, on June 3, with M. J. Gormley, executive assistant, Association of American Railroads, to discuss the important subject of freight car supply, and the role of the paper industry in the conservation of freight cars. Mr. Gormley is recognized as the Number 1 authority in matters of car supply and car service. He is confident that the peak load can be handled *provided the shippers and receivers of freight will not use cars for storage purposes and the car supply is not dissipated.*

Legislation and Public Affairs—(National Defense—Supplement to No. 3)—Following the first report on this subject, issued by E. W. Tinker, Executive Secretary of the American Paper and Pulp Association, (See PAPER INDUSTRY and PAPER WORLD, June, 1941, p. 300), this supplementary report covers the procedure to be followed in obtaining *unfabricated* stainless steel from a *producer.*

Although a paper mill which purchases stainless steel from a fabricator need not furnish an affidavit to the seller from whom he obtains material, it is, however, mandatory for the customer to supply a sworn statement per form PD-10 when purchasing unfabricated parts from a nickel steel producer. This holds true, of course, for all materials on the Critical List governing materials under priorities.

Many mills which produce sulphite pulp purchase stainless steel castings and similar auxiliary equipment for the digesters. These items are invariably purchased from a producer and in such cases form PD-10 is required. In all instances it is necessary to distinguish between fabricators and producers when ordering stainless steel equipment.

Department of Commerce—The Service and Information Office at Washington issues the following report: How can a business man sell to the government?

The initial venture of selling to the government will, of course, present some new problems. None of these problems, however, are necessarily complicated. In order to help manufacturers solve them, Jesse Jones, Secretary of Commerce, early in his administration set up a Service and Information Office, staffed with men who have had years of service in government and have recently completed months of intensive study of the purchase system of each governmental office.

Consequently, the Service and Information Office is equipped to inform manufacturers whom they should contact and exactly how to do so. A manufacturer who desires to cooperate with the government in the present emergency, and lacks specific information as to how to proceed, is invited to apply to this unit, room 1060, Department of Commerce, Washington, D. C. The effectiveness of the assistance rendered by the Office is demonstrated by the large number of telegrams and letters of appreciation which it has received.

Many manufacturers apparently have felt that if they desire to transact business with the government they must either come to Washington in person or employ somebody familiar with government purchasing methods.

The Service and Information Office strongly urges manufacturers not to come to Washington, at least until they have carried on preliminary negotiations by mail with the purchasing agency that handles their particular products.

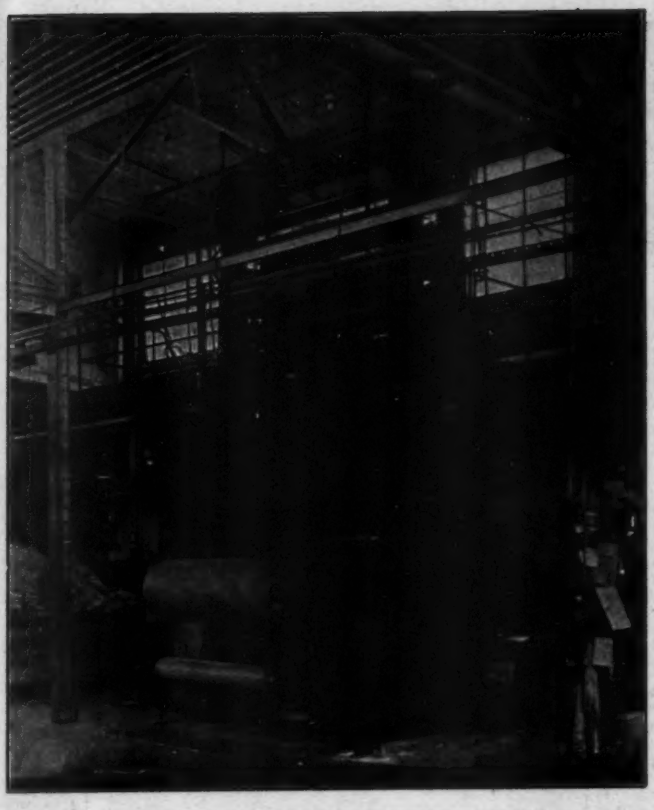
They are advised not to employ outsiders on a commission or other basis. In fact, the War and Navy Departments and the Office of Production Management have repeatedly warned against the employment of what are termed "lobbyists" in the effort to obtain government contracts.

When it is necessary to come to Washington, the Service and Information Office will gladly arrange for the business man to see the particular official with whom contact should be made. In this way the business man will be able to get in and out of Washington with a minimum of time, effort and expense and return home with a clear understanding of the government's needs and the necessary procedure in helping to supply them. Generally, by following this suggested approach, the business of the prospective contractor can be transacted in Washington within one or two days.

Books

Commodity Year Book 1941—This book, the third annual volume in the Commodity Year Book Series, features a section which treats extensively of war-time control of commodities, both during World War I and World War II, of the economic functions of commodity exchanges, and of war and commodity prices. This feature section is followed by 75 separate sections, each of which is devoted to marketing information of a specific commodity. Arranged alphabetically, these commodities run the gamut from alcohol to zinc and include, among numerous other commodities, such commodities as aluminum, brick cement, copper, electric power, gas, iron and steel, lead, lumber, paper, petroleum and products, rayon, rubber, sulphuric acid, tin, and turpentine and rosin. The book, attractively and durably bound in green cloth cover with cover printing in gold, contains about 650 pages and is priced at $7.50 a copy by the publisher—Commodity Research Bureau, Inc., 82 Beaver St., New York.

The Federal Labor Laws—Jointly written by Russell L. Greenman and Leslie E. Sanders, this book treats of the Wagner Act, the Wages and Hours Act, and the Walsh-Healey Act. It has been written specifically as a manual for department heads and foremen; and presents only such information as the authors believe to be of special concern to these men. The book, bound in green cloth cover and with cover printing in red, is priced at $1.50 a copy. The National Foreman's Institute, Inc., Deep River, Conn., is its publisher.



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FOURDRINIER WIRES
CYLINDER WIRES
WISCONSIN WIRE WORKS
APPLETON, WISCONSIN

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CHICAGO ELECTRIC CO. 1227 W. 22nd St., Chicago, Ill.

FULTON DRYER DRAINAGE
Systems
THE MIDWEST-FULTON MACHINE CO.
Dayton, Ohio

CURRENT MARKET QUOTATIONS

RAGS (Domestic)
f. o. b. New York City

NEW RAGS — per cwt.

Blue Overalls	4.50 to 4.75
Corduroy	2.25 to 2.50
Cottons—	
Washables, No. 1	2.10 to 2.25
Fancy Percales	3.50 to 3.75
New Soft Blacks	3.25 to 3.50
New Light Seconds	1.75 to 1.85
New Dark Seconds	1.50 to 1.65
Khaki Cuttings—	
Mixed	2.50 to 2.75
O. D.	3.00 to 3.25
New White Canvas	7.00 to 7.50
New Mixed Blacks	2.25 to 2.50
Shirt Cuttings	
New White No. 1	6.25 to 6.50
Silesias No. 1	4.50 to 4.75
New Unbleached	6.25 to 6.50
Fancy	2.25 to 2.40
Linen Cuttings—	
White	12.00 to 12.50
Grey	11.50 to 12.00

RAGS (Domestic)
f. o. b. New York City

OLD RAGS

	per cwt.	
Roofing—		
No. 1	1.35 to	1.40
No. 2	1.00 to	1.10
No. 3	.90 to	1.00
Twos and Blues—		
Repacked	1.60 to	1.75
Thirds and Blues—		
Repacked	1.35 to	1.50
Miscellaneous	1.15 to	1.25
Whites, No. 1—		
Repacked	3.00 to	3.50
Miscellaneous	2.50 to	2.75
Whites, No. 2—		
Repacked	2.50 to	2.75
Miscellaneous	2.00 to	2.25

RAGS (Foreign)
ex dock New York City

NEW RAGS — per cwt.

New Dark Cuttings	Nominal
New Mixed Cuttings	
New Light Silesias	
Light Flannelettes	
Unbleached Cuttings	
New White Cuttings	
New Light Oxfords	
New Light Prints	

RAGS (Foreign)
ex dock New York City

OLD RAGS — per cwt.

No. 1 White Linens	Nominal
No. 2 White Linens	
No. 3 White Linens	
No. 4 White Linens	
No. 1 White Cottons	
No. 2 White Cottons	
No. 3 White Cottons	
No. 4 White Cottons	
Extra Light Prints	
Ord. Light Prints	
Med. Light Prints	
Dutch Blue Cottons	
French Blue Cottons	
French Blue Linens	
Checks and Blues	
Linsey Garments	
Dark Cottons	
Old Shopperies	

ROPE and BAGGING
f. o. b. and ex dock New York City

Gunny No. 1—	per cwt.
Foreign	Nominal
Domestic	4.50 to 4.75
Wool Tares—	per cwt.
Light	4.00 to 4.25
Heavy	4.25 to 4.50
No. 1 Scrap Bagging	4.00 to 4.25
Manila Rope—	
Foreign	6.00 to 6.25
Domestic	6.00 to 6.25
New Burlap Cuttings	4.75 to 5.00
Jute Threads—	
Foreign (Nom.)	5.50 to 5.75
Domestic	4.75 to 5.00
Strings—	
Sisal	3.25 to 3.50
Soft jute	4.00 to 4.25
Mixed	1.25 to 1.50

WASTE PAPER
f. o. b. New York City

	per cwt.	
Shavings—		
White Envp. Cuttings	3.25 to	3.50
Ord. Hard White No. 1	2.50 to	2.75
Ord. Soft White No. 1	2.25 to	2.50
Soft White, Extra	2.75 to	3.00
Flat Stock—		
Stitchless	1.35 to	1.45
Overissue Mags	1.20 to	1.30
Solid Flat Book	1.10 to	1.20
Crumpled No. 1	1.00 to	1.10
Solid Ledger Books	2.15 to	2.25
Ledger Stock—		
White	1.65 to	1.75
Colored	1.25 to	1.35
New B. B. Chips	.60 to	.65
Manilas—		
New Env. Cuts	2.85 to	3.00
New Cuttings	2.00 to	2.25
Sulphite Mill Wrappers	.60 to	.70
No. 1 Old Kraft	1.50 to	1.65
Old Corrugated Boxes	.82½-	
News—		
No. 1 Wh. News Cuttings	1.00 to	1.75
Strictly Overissue	.75 to	.80
Strictly Folded	.65-	
No. 1 Mixed Paper	.57½-	

CHEMICALS
f. o. b. shipping point

Alum (Papermakers)—	
Lump, cwt.	3.75-
Ground, cwt.	3.50-
Powdered, cwt.	3.90-
Blanc Fixe—	
Pulp, bulk, ton	35.00 to 42.00
Dry, barrels, pound	.0300 to .0400
Bleaching Powder—	
Drums, cwt.	2.00 to 3.00
Casein (Domestic Standard)—	
30-30 mesh (bags), lb.	20.00 to 21.00
80-100 mesh (bags), lb.	21.00 to 22.00
Argentine, lb.	20.00 to 21.00
China Clay—	
Domestic Filler	
Bulk (mine) ton	7.50 to 15.00
Domestic Coating	
Bulk (mine) ton	12.00 to 22.00
Imported (ship side)	
Bulk (lump) ton	15.00 to 26.00
Chlorine—	
Tank cars (wks) cwt.	1.75 to 1.90
Gelatine (silicin), lb.	.70 to .75
Glue, (C.P.) drums, lb.	.1450 to .1500
Litharge, powd., bbl., lb.	.08¼ to
Rosin (Gum)—	
New York, per 100 lbs.	
E	2.53-
F	2.53-
G	2.53-
WW	3.15-
Rosin (Wood), carlots	1.54-
Salt Cake—	
Dom. bulk (wks) ton	16.00 to 17.00
Imp. bulks on dock—	
(Atl. ports) ton (Nom.)	20.00 to
Soda Ash—	
Bulk (works), cwt.	.90 to .95
Paper Bags, cwt.	1.05 to 1.35
Barrels, cwt.	1.05 to 1.35
Soda (Caustic)—Ammonia,	
Solid, drums, cwt.	2.30 -
Ground and flake, drums, cwt.	2.70 -
Sodium Silicate—	
60 deg., 55 gal. drums, (works) cwt.	1.65 to 2.00
40 deg., 35 gal. drums, (works) cwt.	.80 to 1.45
Starch—	
Pearl, 140 lb. bags, cwt.	3.10-
Pearl, barrels, cwt.	3.20-
Paper (Sp.) bags, cwt.	3.20-
barrels, cwt.	3.30-
Sulphur (crude)—	
(mine) bulk, long ton	16.00 to 20.50
Talc—	
Dom. 100 lb. bags (mine) ton	15.00 to 20.00
Imp. bulk, ton (Nom.)	—
Titanium Dioxide—	
Barium Pig., bbls., lb.	.05¾ to .05¼
Calcium Pig., bbls., lb.	.05 to .05¼
Zinc Sulphide, bbls., lb.	.07¾ to .08

CHEMICAL PULP
(Air-dry ton)

	per cwt.
Soda (Dom.) del'd. mill—	
Bleached, contract	3.50 -
Open market	3.90 -
Sulphate (Dom.) f. o. b. mill—	
Bleached	4.25 to 4.50
Kraft No. 1	3.50 to 3.75
Kraft, Southern, del.	3.25 to 3.50
Sulphate (Imp.) on dock—	
Bleached	4.50 to 4.75
Kraft No. 1	3.75 to 4.00
Kraft No. 2	3.50 to 3.75
Sulphite (Fer.)	
On dock—	
Prime bleached	4.00 to 4.25
Prime easy bleach	3.75 to 4.00
Prime strong unbl.	3.25 to 3.50
Sulphite (Dom.)	
Bleached, contract	3.62½ -
Bleached, open mrkt.	3.62½ -
Unbleached, contract	3.17½ -
Unbleached, open market	3.17½ -

MECHANICAL PULP
(Air-dry ton)

	per ton
No. 1 Dom. & Can.	
(f. o. b. pulp mill)	31.00 to 34.00
No. 1 Imp. (On dock)—	
Moist	—
Dry	—

PAPER
f. o. b. New York City

	per ton
Boards—	
Binders	78.00 to 82.00
Chip	42.50-
Chip, sgl. mls. lined	57.50-
Coated, white patent	
.016	77.50-
.020 and heavier	72.50-
Kraft liner	55.00-
News	42.50-

	per cwt.
Book (eased)	
No. 1 Glossy Coat	11.50 to 12.50
No. 2 Glossy Coat	10.25 to 11.75
No. 3 Glossy Coat	9.25 to 11.00
No. 4 Glossy Coat	9.15 to 10.50
No. 2 Offset	7.95 to 10.25
A Grade Super	7.70 to 10.00
B Grade Super	7.25 to 9.50
Bonds (Rag Content)—	
100% Rag	
Ext. No. 1	42.50 to 46.00
100% Rag	40.25 to 46.00
85% Rag	
75% Rag	26.65 to 27.75
65% Rag	
50% Rag	20.15 to 22.00
25% Rag	16.90 to 18.50
Regular Colors	1.00 cwt. extra
Bonds (Sulphite)—	
No. 1	11.05 to 12.00
No. 2	10.10 to 11.00
No. 4	9.25 to 10.00
Colors	1.00 cwt. extra
Glassine (f. o. b. mill)—	
Embossed (25 lb. up)	14.00 to 14.25
Bleached (25 lb. up)	12.75 to 13.00
Unbleach. (25 lb. up)	11.50 to 12.00
Greaseproof—	
Bleach. (25 lb. up)	10.75 to 11.00
Unbleach. (25 lb. up)	10.00 to 10.25
Ledgers (Rag Content)—	
100% Rag	
Ext. No. 1	40.25 to 47.25
100% Rag	32.20 to 37.75
85% Rag	29.90 to 35.00
75% Rag	24.75 to 29.00
65% Rag	21.65 to 26.25
50% Rag	18.70 to 22.75
25% Rag	15.80 to 19.25
Regular Colors	1.00 cwt. extra
Ledgers (Sulphite)—	
No. 1	12.35 to 13.80
No. 2	9.25 to 11.25
No. 4	8.50 to 10.25

	per ton
News—	
Rolls (Contract)	40.00 to 50.00
Rolls (Spot)	(nominal)
Sheets	58.00 -

	per ream
Tissues (Carlots)—	
White, No. 1	.97½ -
White, No. 2	.75 to .77½
Anti-Tarnish M. G.	.80 to 1.05
Colored	.87½ to 1.10
Kraft	.85 to .90
Manila	.77½ to .80
Napkins, semi-crepe (12¾ lb. to M shts.) per cs	.46 -
Napkins, full crepe and emb'sed (12¾ lb. to M shts.) per cs.	.48 -
Toilet, Bleached (M shts.) per cs	5.80 -
Toilet, Unbleached (M shts.) per cs	3.80 -

	per case
Towels—	
Bleached	3.10 to 3.65
Unbleached	1.95 to 3.30

	per cwt.
Wrappings (Kraft)—	
Extra Quality	5.50 to 6.00
Super-Standard	4.87½ to 5.50
Northern Standard	4.50 to 5.00
Southern Standard	4.50 to 5.00

Wrappings (Sulphite and Bleached Kraft)—
(Rolls, f. o. b. mill)

	per cwt.
Bleached papers—	
M.F.& M.G. Waxing, 20 lb. (Carloads only)	7.00 to 7.25
(10,000 lbs.)	7.10 to 7.35
Drug wrapp. 35 lb.	6.50 to 6.75
Unbleached Papers—	
Com. Grd. Butch. 40 lb.	4.87½ to 5.12½
No. 1 Butchers	5.50 to 5.75
No. 1 Imit. Parch & Dry Fin. Groe. Sulphite 30 lb.	6.00 to 6.25
No. 2 Imit. Parch & Dry Fin. Groe. Sulphite 30 lb.	5.62½ to 5.87½
Steam Finish, 50 lb.	4.50 to 4.62½
Water Finish, 40 lb.	4.87½ to 5.12½

	per cwt.
Manilas—	
Envp. Mls., Sub. 16-40 (No. 1)	5.75 to 6.00
Envp. Mls., Sub. 16-28 (No. 2)	5.50 to 5.75
Envp. Mls. (Prices based on large sheets untrim'd reasmarked, in bdls.)	
Wrapp. Mls. 35 lb. up—	
No. 1	5.75 to 6.00
No. 2	5.50 to 5.75
M. G. Sulphite and Kraft (other than Waxing)	
Grade A-35 lb.	6.25 to 6.50
Grade B-35 lb.	6.00 to 6.12½